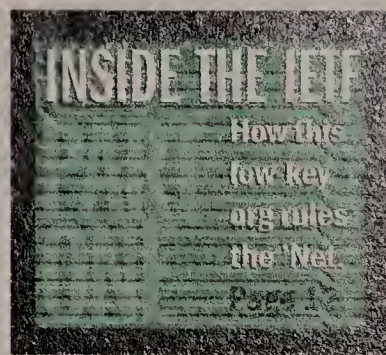


NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Bill and Java?
What a joke!

Scott, you'd love
to own Windows.

The two faces of Java

By Ellen Messmer
and Carol Sliwa

The Moscone Center in San Francisco last week seemed more like a giant boxing ring than a convention center.

In one corner, delivering a low-key keynote before a standing room only crowd at its Software Developers West conference was Microsoft Corp. CEO Bill Gates. While praising Java in some regards, Gates

pooh-poohed the purely platform-independent approach to Java, dubbing it the "least common denominator," and instead pushed Java for Windows.

In the other corner, at the rival JavaOne conference, a feisty Sun Microsystems, Inc. Chairman Scott McNealy was imploring developers to write only "100% Pure Java," as defined by Sun's new confor-

See JavaOne, page 14

Get your fill of Java news online:

- Summaries of show keynotes
- Announcements from JavaOne
- Overviews of Sun's and Microsoft's competing visions

NetworkWorld

Fusion

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New Cisco 3800 mux boosts fledgling voice plan

3800 WAYS TO INTEGRATE VOICE AND DATA

Features of Cisco's "Rincon" ATM access mux:

- One-, three-, and eight-slot chassis
- 1G bit/sec ATM bus and 16M bit/sec TDM bus
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- 2M bit/sec ATM UNI/NNI
- 8M bit/sec wireless trunk
- Two-wire or four-wire analog voice support
- T-1/E-1 digital voice, up to 24 DS-0s
- Voice switching based on dial digit detection
- 56K bit/sec or T-1/E-1 WAN link
- Ethernet/token-ring router module
- Supports distances up to 8-10 km

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. soon will unveil a key product in its fledgling voice/data integration venture, which analysts say will help the company fend off the newly created Ascend/Cascade behemoth.

Later this quarter, Cisco will roll out the 3800 ATM access multiplexer, a modular customer premises device for melding voice, data and video traffic onto a high-speed pipe to the carrier cloud. The 3800, developed under the code name "Rincon" (NW, Jan. 27, page 1), will also sport an 8M bit/sec wire-

See Cisco, page 15

Ascend buys Cascade

Mega-mergers to continue as large hardware firms fight upstarts and each other.

By Tim Greene

Here we go again.

This time it is Ascend Communications, Inc. swallowing up Cascade Communications Corp. in an attempt to dominate the market for hardware used to access the Internet.

Sound familiar? Get used to it. These kinds of mega-mergers are likely to continue.

Outfits like Ascend are doing this not only for the reason so often cited — to build end-to-end product lines — but to keep little start-ups from stealing away pieces of their markets, one expert said.

"[Start-ups] say we can beat [big companies like Cisco] in

this niche, and we have a shot at domination," said Paul Deninger, CEO of Broadview Associates, a merger and acquisitions advisers group in Fort Lee, N.J.

Those who want to play big now believe they must bulk up with broadened product lines

that meet a range of user demands. "This is a period of consolidation in the industry, and mass is definitely a competitive advantage," said Matt Barzowskas, vice president of First Albany Corp. in Boston.

That reasoning most likely
See Ascend, page 57

Is Shiva stuck?

By Tim Greene
Bedford, Mass.

If you had a week like the one Shiva Corp. CEO Frank Ingari had last week, you might just want to pack it all in.

The chief financial officer of his remote access company quit, he had to warn Wall Street that Shiva would fall short of revenue projections, and then its stock continued its nine-month nose-

See Shiva, page 57

Novell goes Web-to-host

By Christine Burns
Orem, Utah

Novell, Inc. is prepping server-based Web-to-host technology that gives end users simple access to mainframe applications via standard Web browsers.

Web-to-host connectivity is a hot topic as companies set up intranets to give users access to legacy data over a TCP/IP backbone, and corporate partners

See Novell, page 14



It's been a wild ride, but Dave Fernandes (left) and Rick Carpani now have FPL's statewide ATM backbone up and running.

FLORIDA POWER PERSEVERES

Utility company overcomes hardware and software nightmares to complete statewide ATM backbone.

By Charles Bruno

Dave Fernandes is usually a quiet guy. But early last December, the Florida Power & Light Co. (FPL) senior telecommunications analyst let ATM switch supplier Northern Telecom, Inc. have an earful.

With a scant few weeks before a critical delivery deadline for FPL's inaugural ATM project, the company's relatively untraveled DS-3 backbone started to choke under mysterious loads of almost 100%.

The emergency couldn't have come at a worse time. Fernandes and fellow senior telecommunications analyst Rick Carpani had just finished fighting a problem with Nortel's DS-1 interface cards that sit in ATM switches across the statewide network.

With another problem following so closely on the heels of the first, Fernandes had had enough. He called his Nortel contacts and suggested they drive over in a U-Haul and cart away all their ATM switches.

See Florida Power, page 44

Third in a continuing series on FPL's ATM migration.

Microsoft® Windows NT®/Microsoft

Rank	Manuf.	System
1	Dell	PowerEdge 6100
2	Compaq	ProLiant 5000 6/200 Mod
3	NCR	WorldMark 4300 c/s
4	HP	NetServer LX Pro c/s
5	Compaq	ProLiant 5000 6/166 Mod
6	SNI	Primergy 560
7	Digital	Prioris ZX 6200MP 4 CPU
8	NCR	WorldMark 4300S c/s
9	Digital	Prioris ZX 6166MP c/s
10	Digital	Prioris ZX 6166MP c/s



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tpmC	\$/tpmC	Total Cost (5 year)
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7368.00	\$ 86	\$ 631,470
7351.50	\$ 79	\$584,286
7128.20	\$ 80	\$568,730
7063.07	\$ 69	\$484,578
6712.53	\$ 65	\$437,418
6043.93	\$ 90	\$544,416
5740.00	\$117	\$671,204
5517.00	\$121	\$669,344

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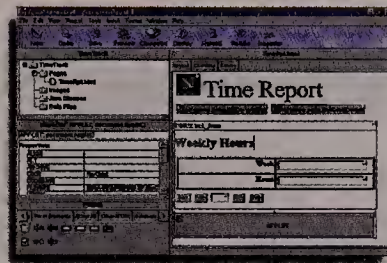
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AWFUL APPS?

Deloitte & Touche's Todd Wood expounds on the difficulties of merging client/server applications with the Web. Page 28.

DRAG AND DROP



Netscape tool lets developers "drop" prebuilt component onto Web pages. Page 29.

THINNING DOWN

HP rounds out desktop line with new netstations that promise easy Internet access. Page 24.



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This Week

Only on Fusion

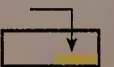
- **Intranets.** The IntraNet Toolkit, a collection of tips and news for building a better intranet, including breaking news, case studies, technology overviews and reviews, debuts this week. And check out IntraFinder, a searchable database of intranet-related news and columns. Click on the IntraNet button on the left-hand toolbar.
- **Internet.** Gabriel Battista, CEO of Network Solutions, which oversees domain name registration, discusses the potential for competition in the field and answers charges that the company must be doing something wrong to lose money, in an exclusive Fusion interview. Read the highlights of our interview or download the complete transcript. **DocFinder: 1425**
- **Domain names.** Meanwhile, Network Solutions has failed to get enough people to respond to E-mail requesting payment for domain name registration, so it's turned to that old standby, messages in paper envelopes delivered by the Postal Service, to get the word out. **DocFinder: 1424**
- **Mega-merger.** It was announced as a \$3.7 billion deal, but Ascend's planned acquisition of Cascade immediately dropped in value as Wall Street began to doubt the value of the purchase. See how Ascend and Cascade stocks have fared since the announcement. **DocFinder: 1421**

From the front page

- **Mega-merger.** It was announced as a \$3.7 billion deal, but Ascend's planned acquisition of Cascade immediately dropped in value as Wall Street began to doubt the value of the purchase. See how Ascend and Cascade stocks have fared since the announcement. **DocFinder: 1421**

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News briefs, April 7, 1997

AT&T in rare agreement with RBOCs

The monthly \$6-per-line federal Subscriber Line Charge on most businesses' phone bills would go up, under a proposal submitted jointly by AT&T, NYNEX Corp. and Bell Atlantic Corp. to the Federal Communications Commission last Friday. The fee would increase to a maximum of \$8 per month, though for most businesses it would fall in between \$6 and \$7, according to a complicated formula. In addition, all long-distance carriers would be hit with a new \$2 monthly charge for each business line presubscribed to them, which the carriers might or might not pass along to users. The incentive for these rate increases: Local exchange carriers would agree over time to reduce their per-minute access charges on dial-up voice and data connections by 45%, though users would have to recover those savings in the form of toll reductions in from long-distance carriers.

Now entering a holding pattern

A plan to create a new nonprofit organization to dole out IP numbers has been put on hold. Supporters of the proposed American Registry of Internet Numbers, however, insist the plan has not been derailed. Network Solutions, Inc., which currently doles out the numbers using domain name registration fees, hopes to turn the duties over to another party before its cooperative agreement with the National Science Foundation expires next year.

Mergers, mergers everywhere

SBC Communications, Inc. and Pacific Telesis Group completed their merger last week, forming the first super local exchange carrier since the passage of the Telecommunications Act of 1996. Meanwhile, MCI Communications Corp. shareholders approved the proposed merger with British Telecommunications plc at MCI's annual meeting last week. 77% voted in favor of the merger of the two companies that will be called Concert.

Gaga for Gigabit

The Gigabit Ethernet Alliance (GEA) is expected to sponsor a technology demonstration of approximately 25 vendors' Gigabit Ethernet gear at the upcoming NetWorld+Interop trade show in Las Vegas. The demo will involve vendors connecting their switches via a Gigabit Ethernet link to a Hewlett-Packard Co. server to pull up a video application. To participate in the GEA's demo, vendors must prove interoperability with at least one other vendor's Gigabit Ethernet product. So far, Alteon Networks, Inc. and ProMinet Corp. have passed the testing, according to industry sources.

**Are we there yet?**

At long last, Cisco Systems, Inc. this week will announce extensions to its Catalyst 5000 line of LAN switches, including the industry's worst-kept secret, the 13-slot Catalyst 5500 (NW, April 8, 1996, page 1). Cisco is also expected to further delineate its overall LAN switching strategy.

FCC puts a hold on PCS payments

Last week, the Federal Communications Commission decided to stop collection payments for the C- and F-block Personal Communications Services licenses it auctioned off last year. Earlier this week, Pocket Communications, one of the largest bidders in that auction, filed for bankruptcy, and others are in shaky financial situations. The C-block auction was designed to let entrepreneurs get into the market.

Pushed out the door

Push technology vendor IFusion Com Corp. of New York announced it has laid off all of its 140 employees and filed for Chapter 11 bankruptcy protection. Despite relatively good reviews for its Arrive software, which had a cable TV-style interface, IFusion had trouble raising investment money. Intel Corp. recently rejected an IFusion request for development funds.

Lucent plows 'Net telephony path

New central office server could save user dollars, but platform components remain in flux.

By David Rohde

Warren, N.J.

Lucent Technologies, Inc. hopes to deliver a new way for carriers to route voice and fax calls over the Internet later this year.

But at the same time, Lucent officials acknowledged that they are still fitting together the pieces of its Internet telephony server for end users announced nearly seven months ago.

Lucent's Internet Telephony Server SP, introduced last week, is a piece of equipment carriers can install in or near a central office (CO). It converts circuit-switched traffic originating from a telephone or fax machine to packets for shipment over the Internet to another CO — perhaps one located across the country or overseas — outfitted with the same equipment.

The goal is to allow carriers to chop out increasingly expensive domestic and international public network trunks and potentially offer toll savings to their customers, without requiring users to install Internet telephony PC software.

The SP server is essentially a carrier version of Lucent's origi-

nal Internet Telephony Server, a customer premises equipment (CPE) item unveiled at last fall's NetWorld+Interop show.

Lucent last month announced its first beta customer for the server — a German Internet bookseller with an after-hours telephone service center

Lucent spokesman. Such boards use digital signal processing to perform functions such as voice compression and packetization. Lucent still has yet to decide among such voice board manufacturers as Dialogic Corp. and Natural Microsystems, Inc., Schwark said.

The 'Net's waiting for a call

Lucent Technologies is inching along the path to offering Internet alternatives to circuit-switched public network transport.

Product	Description	Status
Internet Telephony Server	CPE that routes voice and fax traffic over the Internet	First beta test begins in mid-April
Internet extension to Intuity Messaging Solutions	Browser-based access to a unified E-mail/voice/fax mailbox	Beta tests under way; general availability in the second half of 1997
Internet Directory Server	High-capacity system to meld incompatible directory databases	Became available January 1997
Internet Telephony Server SP (Service Provider)	Carrier gear to convert and transport voice and fax traffic via packet data networks	Trials and lab tests slated with three carriers

in Florida — but the trial has yet to begin.

"We're in the middle of a hardware bake-off to decide what [voice] boards to use," explained Ryerson Schwark, a

Lucent has held other product details very close to the vest while it gears up for lab and field tests of the SP server with MCI Communications Corp., GTE Corp. and France Telecom. But Schwark confirmed analyst reports that the SP server will run on UnixWare SCO, while the CPE version will run on Windows NT.

Analysts said they had scalability concerns about both versions, with the CPE server capable of carrying 16 simultaneous conversations and even the SP server capable of carrying only 24 or 30, based on a single channelized T-1 or E-1 connection. "This is a little box," said Peter Bernstein, president of Infonautics Consulting, Inc. in Ramsey, N.J.

But the eventual promise of Lucent's approach, Bernstein said, is that a carrier could perform "best performance routing" of voice and fax connections according to quality-of-service parameters established by the user.

The SP server can default back to a carrier's own ATM or frame relay network in case Internet congestion renders the quality of the phone call unacceptable, Lucent officials said. And an eventual second version of the SP server will allow further rerouting back to the public switched telephone network, if necessary. ■

56K modems tested, standards accelerated

By Tim Greene

Deciding which 56K bit/sec modem to buy just got a little less agonizing.

The International Telecommunication Union (ITU) decided late last month to recommend a standard for the fast modem technology by January 1998. That lops a year off the previously projected date for a single standard that the two competing technology camps can support.

U.S. Robotics, Inc. and Rockwell Semiconductor-Lucent Technologies, Inc. have developed separate technologies that do not interoperate, leaving users to worry about which one to buy if they want to connect to someone at the other end.

Hard numbers

In addition to that worry, users have been told the modems will not work at 56K bit/sec because they need more power than the phone lines can

handle. But users have not been given hard data.

Now the first real-world performance numbers are in, and they are not so bad. In fact, 82.1% of calls were completed at 40K bit/sec or greater. 54% of the calls were completed above 45K bit/sec. The top speed reached 53.3K bit/sec, was hit only .3% of the time.

The measurements were made by MindSpring Enterprises, Inc. of Atlanta between March 24 and April 2, from customers using 56K bit/sec modems from U.S. Robotics.

The calls were made to the 'Net service providers' points of presence in Atlanta (40%), Birmingham, Ala. (15%), Raleigh, N.C. (6%), and Tampa, Fla. (9%), with the remaining calls made from scattered locations.

The sample of 5,986 calls came from at least 577 users, according to Robert Sanders, chief technical officer at MindSpring. ■

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Networks that go the distance™

Sprint pounds on interactive Drums

By Denise Pappalardo

Sprint Corp. this week tightens its grip on networked interactive services with enhancements to its Drums services that will let PC and Macintosh users send video E-mails over ISDN.

Through a licensing agreement, Sprint has added e-motion, Inc.'s CreativePartner video E-mail software to the Sprint Drums 1.7 software suite. The latest version of Drums will also let users send interactive video files over ISDN Primary Rate Interface and Basic Rate Interface connections. Previously, Drums was only available over a dedicated T-1 connection to SprintLink, the interexchange carrier's Internet Protocol net.

Until this week, Drums was supported only on Silicon Graphics, Inc. (SGI) Indy, Indy 2 and O2 servers. Now PC and Mac users can communicate with SGI-based Drums users with Sprint's new video mail feature. But for real-time video transmissions, users are still limited to SGI servers.

The video mail feature lets users send video files with voice and Post-it note messages as they would send a regular E-mail. This feature is expected to be particularly useful for businesses that want to extend the reach of Drums to employees using PCs

and Macs but do not want to make the \$8,000 to \$30,000 investment in an SGI server for each employee.

Drums allows users to collaborate across Sprint's IP over ATM network on video and computer-generated graphics files, said

Angela Rizzo, director of Drums at Sprint. The service is specifically targeted toward the advertising and entertainment industries. Although the carrier's approach is now limited to specific industries, it is a stepping stone to other market segments, such as publishing, medical imaging, education and research, Sprint's Rizzo said.

"When creating a movie, users need the ability to view, annotate and make changes in real time over the network," Rizzo said. "Drums lets them do this while saving days of editing time."

Sprint is apparently ahead of the pack when it comes to networked multimedia services, said Dan Taylor, senior analyst at

Aberdeen Group, Inc., a Boston-based consulting firm. Neither AT&T nor MCI Communications Corp. have comparable service offerings.

Although MCI has stated its plans to offer video mail services, it is truly at the early stages of development. MCI is just beginning alpha tests within the company, and beta tests with outside users are not expected to begin for another three to four months, said Sridhar Krishnaswamy, principal adviser of engineering at MCI.

Drums 1.7 is available to existing Drums users at no additional cost.

Additional copies are available for \$500 (see graphic).

© Sprint: (800) 931-3132

THE SOUND OF SPRINT'S DRUMS



Drums is a networked interactive application service that lets users send real-time video over dedicated IP connections or dial-up ISDN lines. One Drums 1.7 software suite is included with each offering.

Access	Installation charges	Monthly charges (CPE charges included)	Additional usage charges
T-1	Waived with one-year contract	\$2,312	Unlimited access
ISDN PRI	Waived with one-year contract	\$2,200 for 120 hours of usage	10 cents for each minute over 120 hours
ISDN BRI (two connections)	\$810	\$1,000 for 60 hours of usage	15 cents for each minute over 60 hours
ISDN BRI	\$610	\$750 for 30 hours of usage	15 cents for each minute over 30 hours

BRI - Basic Rate Interface CPE - Customer premises equipment PRI - Primary Rate Interface

IBM targets IP with new communications software

By Michael Cooney

Raleigh, N.C.

IBM last week announced an ambitious plan to recast its Enterprise Communications software packages in a TCP/IP mold.

The company announced the eNetwork Software initiative, which is an overarching plan to revamp and evolve its existing Communications Server and Personal Communications client offerings into more open, multiprotocol, multiplatform packages.

The idea is to provide users with a set of integrated communications packages that provide universal access to host resources. IBM traditionally has focused on SNA access and integrating SNA and TCP/IP nets, but now wants to offer packages solely for the TCP/IP world.

"What we are trying to do is provide the same level of server and client support to TCP/IP that we've always given SNA," said James Neiser, vice president of marketing for IBM's Networking Software group. "That means a set of connectivity ser-

vices that eases user administration of IP environments, increases Java support and makes mobile computing easier."

IBM CHARGES 'NET, AGAIN

eNetwork Software promises to:

- Ease access to enterprise data from mixed client/server hardware across any communications protocol.
- Provide consistent end-user client interfaces.
- Enable smooth integration of legacy networks and applications with the Internet and intranets.
- Reduce complexity of installing and configuring end-user desktop systems.

The first product in the eNetwork line is the eNetwork Communications Suite for Windows. The package includes FTP Software, Inc.'s TCP/IP stack, IBM's Personal Communications 3270/5250 host emulator, Lotus Development Corp.'s Notes Mail client and a Netscape Communications Corp. Navigator

Web browser.

Purchased separately, the packages would total about \$800. The suite will not be available until the third quarter, and it will sell for \$449.

The eNetwork project will expand in the second half of the year with the introduction of new Communications Server packages. Code-named Cassiopeia, the servers will also include the FTP Software TCP/IP technology but will add new IBM functions such as a Web server, remote access, Java and ActiveX application support. A directory server will enable users to build large server-based enterprises.

On the client side, IBM is working to include such features as Java applet management and improved TCP/IP connectivity in its line of terminal emulation packages. The eNetwork Communications Suite typifies client packages IBM is building, Neiser noted.

"A large player that can offer a variety of goods and services to the IP world, like IBM can, would be welcome by most users," said Lucinda Santisario-Borovick, research manager for network architectures at International Data Corp., a research firm in Framingham, Mass. "Historically, IBM hasn't been strong on delivery." ■

AT&T: An ISP fee is OK with me

By David Rohde

Washington, D.C.

AT&T may be a large Internet service provider, but it has thrown its support behind a controversial move to force ISPs to pay a per-minute duty to local exchange carriers (LEC) for their Internet traffic.

AT&T told the Federal Communications Commission that such a fee — one that AT&T would receive from other ISPs if it succeeds in becoming a LEC — would end "marketplace distortions" that encourage ISPs and their users to employ inefficient circuit-switched access lines.

Responding to the commission's call for comments on ISP regulation, AT&T said the fee should be set lower than the current average 3 cents per minute levied on long-distance carriers for phone calls, but the fee should be instituted even if the long-distance access fee remains inflated. Industry observers and competitors said AT&T's position reflects the relative lack of importance and lower revenues of its 'Net business compared to its long-distance and potential local exchange markets.

"It reflects telephony thinking rather than ISP thinking," said Alan Taffel, vice president of marketing and business development for the UUNET Technologies division of WorldCom, Inc. Virtually all other ISPs gave a thumbs-down to an access fee, following an avalanche of virtually unanimous opposition E-mailed to the FCC by individual Internet users (NW, March 17, page 8).

But Tom Evslin, vice president of AT&T's WorldNet Inter-

net service, said the company's position reflects its combined experience in the telephony and Internet marketplaces. "I think the Internet industry doesn't understand the whole issue and doesn't understand its own interests, either," Evslin said.

Because long-distance calls generate access fees, he explained, ISPs have to concentrate on providing access through hundreds of local points of presence rather than building a few "super-POPs" around the country.

"I'm constantly embarrassed by what we have to charge for 800 access to the WorldNet network," Evslin said. If the FCC instituted an ISP access fee but compensated by lowering switched access rates on long-distance calls, the result would be more efficient investment decisions by ISPs, he said.

AT&T also said its prospects for local market entry could suffer without a per-minute Internet access fee. The fact that ISPs and their customers can now obtain what AT&T labels below-cost access "makes investments in newer, competing [access] technologies less attractive than they otherwise would be," the company said in its FCC filing.

And AT&T warned that if a large amount of long-distance traffic migrates to the Internet, the amount of funding available to subsidize universal residential telephone service and to connect schools to data networks will shrink. Such universal service programs are largely funded through long-distance access fees, and AT&T is the nation's largest payer of such funds. ■

DCI'S DATABASE & CLIENT/SERVER WORLD

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Acacia introduces Web-based VLAN management application

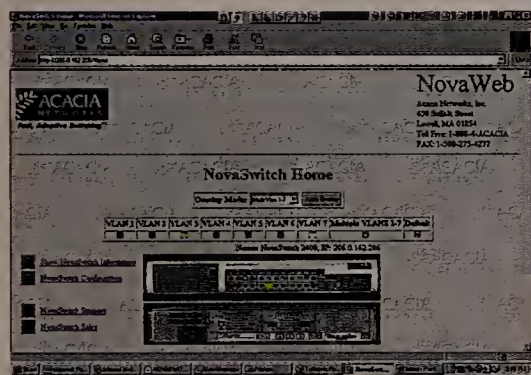
By Jodi Cohen

Lowell, Mass.

Acacia Networks, Inc. may be a small player in the network industry, but the start-up could be onto something big — Web-based virtual LAN management.

The company this week will announce what many industry observers say is the first Web-based VLAN management tool to hit the market. NovaWeb 2.0, which works with Acacia's NovaSwitches, provides customers with a user-friendly interface to configure and troubleshoot VLANs from any computer equipped with a standard Web browser.

"This takes the mystery out of VLANs," said Glenn Gabriel Ben-Yosef, president of Clear Thinking Research, Inc., a Boston-based consultancy. "Now you don't have to be super technical to be able to understand VLANs, so nobody should be afraid to try them."



NovaWeb software lets customers configure and manage VLANs through a graphical user interface that features a photographic image of a NovaSwitch along with color-coded VLAN information.

With NovaWeb 2.0, net administrators can group users logically with network resources, wall off certain segments of the network, and reduce the impact of broadcast and multicast traffic, according to Alan Raderman, director of product marketing at Acacia.

A highlight of the announcement is that Acacia's switches can be upgraded via software to comply with the emerging IEEE 802.1q VLAN specification, which enables NovaSwitches to participate in multivendor VLANs. The 802.1q VLAN standard — expected to be finalized by year-end — will determine VLAN frame formats, membership rules and management procedures. Other switch vendors cannot change their switching code, so their products will likely require some sort of hardware upgrade, analysts said.

Another differentiator — thanks to the Web — is that Acacia's NovaWeb 2.0 software is not tied to any particular net management system platform. VLAN management applications from competitors 3Com Corp. and Cabletron Systems, Inc., however, only run on certain SNMP-based management platforms, such as Hewlett-Packard Co.'s OpenView, Sun Microsystems, Inc.'s SunNet Manager and IBM's NetView/6000.

The Web will likely become the hottest trend in VLAN management, analysts said. In fact, Cabletron may not be too far behind Acacia when it comes to Web-

based VLAN tools. Cabletron last week announced a Web management strategy that includes support for the company's LAN and ATM switches. According to one analyst, Cabletron will likely expand its products to include VLAN management

capabilities.

"Not only would I expect Cabletron to come out with a similar Web-based VLAN product, but I bet it will be able to manage multiple vendors' devices," Ben-Yosef said. "Acacia is really onto something, so

everybody will follow suit."

NovaWeb 2.0 will be available in June for \$295. Through August, Acacia will offer the application for free with the purchase of a NovaSwitch.

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No. 1 of 6 THE DATABASE & CLIENT/SERVER WORLD SERIES

UNIVERSAL SERVERS A Synthesis of Relational and Objects?

The arrival of Web-based applications is causing a revolution in the DBMS industry. The need for memory at Web sites is forcing companies to choose between relational and object DBMS technology. A new approach is that of the "Universal Server", a synthesis of the two techniques. This seems like a good idea, but questions remain about path length and the ability to perform. Universal servers will be a big issue in 1997, when their ability to deliver the goods and perform will be under scrutiny.

Current RDBMS are mature and can support very large applications that read and write alpha/numeric serial (simple type) data. You can query an RDBMS without providing any hint about how to process that query. Many simultaneous users may read and update the same database, while the RDBMS automatically enforces database integrity in the presence of multiple possible system failures. RDBMS' handle complex data by throwing it into a BLOB (which the DBMS doesn't understand), and then allowing you to download to a fat client where it is manipulated with client code. Current RDBMS' are very scaleable.

An ODBMS is a shared virtual memory extension to your application — it provides persistence for any data type, including text, spatial data such as maps or even video and audio. Most ODBMS' don't provide the basic security, query and multi-user functions of an RDBMS, however. For performance reasons an ODBMS is tightly coupled with the language of the application and the application logic. Database access is navigational.

Stay tuned for an exciting battle on the DBMS front in 1997. You can bet that the Internet and the need to support extended data types will bring DBMS solutions into many new application areas.

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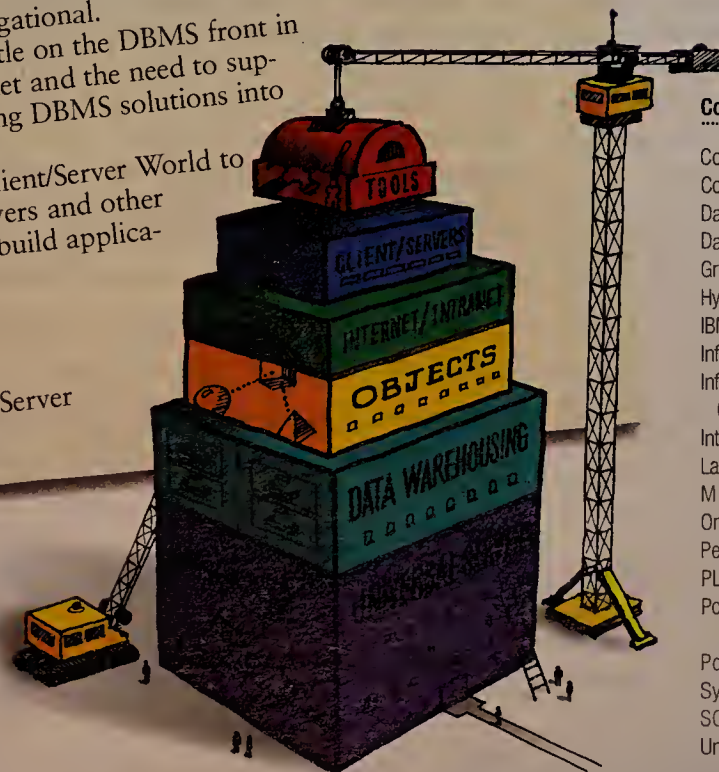
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Cabletron fills out Web management plan

By Jim Duffy
Rochester, N.H.

Cabletron Systems, Inc. last week fleshed out its Web management strategy with plans to deliver Java- and Web-enabled management applications, and a more flexible object-oriented programming environment.

The strategy, which had been expected (*NW*, Dec. 9, 1996, page 1), includes a time frame for the use of Common Object Request Broker Architecture (CORBA) in its Spectrum management platform, an architecture for Java-based device management and the introduction of three new Web-based products.

Analysts said Cabletron's plan is more specific than those of net management rivals Hewlett-Packard Co. and IBM but still requires time to enfold all Spectrum products before it can become a competitive advantage.

"If you match up head-to-

head functionality of what they have now vs. what they could have with Java, they're not close," said Rick Villars, director of network software research at International Data Corp. in Framingham, Mass. "There's so much development work that has to be done."

To that end, Cabletron said it will add CORBA object technology to Spectrum APIs during 1998. Spectrum's proprietary object technology supports only C++ today.

CORBA will also allow Cabletron to offer a set of reusable objects for software developers targeted at management functions, such as software distribution and topology viewing.

Another key to Cabletron's expansion of its application portfolio is Java. Cabletron said it will base future device management application development on Java to write applications that

are integrated with Spectrum, separately launchable or embedded in networking hardware.

During the first quarter of 1998, Cabletron will roll out a Java-based autodiscovery service that will find objects on the network and discover their interrelationships.

The three new products introduced today are:

- A Web-based version of the SpectroRx case computer-aided software engineering-based reasoning tool that will ship in the third quarter.

- A Java-based ATM management package that can manage any ATM device supporting the ATM Management Information Base (RFC 1695); it will go into field trial this month.

- A Java application for managing Cabletron's SmartSwitch 6000 and 2200 that can work with management platforms; it will ship later this year. ■

Effort afoot to promote messaging for the masses

By Paul McNamara
Philadelphia

Industry leaders will join hands in the City of Brotherly Love this week to promote their collective push to extend transaction-messaging reliability into the high-volume world of shrink-wrapped business applications.

IBM, Intel Corp., Microsoft Corp., Hewlett-Packard Co. and six other companies will embrace a new technological blueprint and special interest group—dubbed Business Quality Messaging (BQM)—at the Electronic Messaging Association's annual conference here.

Also at the show, IBM will introduce the first BQM-influenced product, a simplified version of IBM's MQSeries middleware, called MQWare. Designed for easy, inexpensive integration into messaging-based business software, MQWare uses queuing to ensure that messages reach their intended destination intact and are sent only once.

"The real focus of this [BQM] effort is having a way to run business applications over corporate intranets," said Mark Smith, business manager of the enterprise server group at Intel. "We can't really do that today."

While the potential of this initiative may be as clear as that crack in the Liberty Bell, industry experts are cautious in assessing BQM's chances for having

widespread impact.

"It's a delicate move forward by IBM, Intel and these other guys to sort of toss out the idea of a strong messaging layer under E-mail and to see if it flies," said John Mann, a research director at The Yankee Group, a Boston-based consultancy. "I think it's a trial balloon, more or less."

IBM hopes to get airborne first with MQWare. According to the company, by borrowing its messaging and queuing technology from MQSeries, MQWare will allow volume application vendors to guarantee corporate customers the same level of reliability previously associated with mainframe transactional messaging.

However, while MQSeries runs on 20 different operating systems and various protocols, MQWare is solely designed for networked applications running over TCP/IP on Microsoft's Windows NT (and not, ironically, IBM's own OS/2).

The MQWare technology is already being incorporated into SmartRouter from Isocor and RedBox Fax Router from RedBox Technologies, Inc., a Los Altos, Calif., start-up. "We're going to be using [MQWare] in a couple of our products," said Mark Stieglitz, vice president of marketing at RedBox.

Senior Editor John Cox contributed to this story.

THIS WEEK AT EMA '97

Company	Announcement	Features
Hewlett-Packard	June availability of HP AdminFlow, a Web-based administrative workflow solution	Automates processes such as travel requests, expense reports and invoicing; handles 12,500 workflow actions per hour Cost: \$60 per user
Tally Systems	Veranda Enterprise Messaging Reporter, management software for Internet, E-mail and fax resources	100 customizable reports, incorporating 75 variables; a flexible charge-back design and alias resolution Cost: \$2,995 for 50 users
Infonet Software Solutions	Release of Messenger Workplace 1.1, a productivity software set for corporate intranets; available immediately	Support for Post Office Protocol 3, allowing network managers to administer disparate messaging systems from one point Cost: Starts at \$9,995

Fast LANs

3Com goes gigabit

First of Big Four to unveil Gigabit Ethernet product family.

By Jodi Cohen
Santa Clara, Calif.

When you think of Gigabit Ethernet vendors, you probably think of start-up companies. But don't tell that to 3Com Corp.

The vendor last week became the first of the Big Four internet-working vendors to unveil a Gigabit Ethernet product family when it announced five new Gigabit Ethernet Networking (GEN) products.

The GEN gear, which will be on display at the upcoming NetWorld+Interop trade show in Las Vegas, includes a stand-alone 1G

bit/sec switch and uplink modules, as well as a Gigabit Ethernet server adapter.

tomers provide Gigabit Ethernet links for backbone, wiring closet and server connectivity. The SuperStack II Switch 9000 device offers eight switched Gigabit Ethernet ports for aggregation of Fast Ethernet and Ethernet workgroups, data centers or server farms.

3Com also introduced the SuperStack II Switch GEN uplink module, which allows customers to link existing SuperStack II switches to the new 9000. The module provides one 1G bit/sec Ethernet full-duplex interface for connection over distances of up to 250 meters.

For the LAN backbone or wiring closet, 3Com rolled out the CoreBuilder 1000Base-SX module for the CoreBuilder 5000 (previously called the ONcore chassis). The card allows customers to migrate to Gigabit Ethernet while retaining investments in shared and switched Ethernet, Fast Ethernet, token ring and FDDI.

3Com also unveiled the 7800 Gigabit Ethernet interface card for the CoreBuilder 7000 ATM switch (previously called the CellPlex switch).

The two-port card allows customers to deploy two Gigabit Ethernet links for server connections or interswitch links while using 155M or 622M bit/sec ATM links for campus backbones or connecting to WAN services.

In addition to the new switches, 3Com announced the Gigabit EtherLink PCI network interface card (NIC), which lets customers connect a PC server to a gigabit backbone.

Future Gigabit Ethernet products—which will be available in the first half of 1998—include a backbone switch that will support more than 28 Gigabit Ethernet ports, as well as a device that provides wire-speed routing in excess of 30M packet/sec.

Pricing for GEN switches ranges from \$5,000 to \$19,995, and pricing for the NIC has not yet been set. All products will ship by year-end, except the CoreBuilder card, which will ship in the first quarter of 1998.

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3COM'S SWITCH STACKED WITH FEATURES

The SuperStack II Switch 9000 includes:

- An 8-port Gigabit Ethernet switch
- A forwarding rate of 11.9M packet/sec
- Virtual LAN support
- PACE class-of-service technology
- RMON support

bit/sec switch and uplink modules, as well as a Gigabit Ethernet server adapter.

Competitors Bay Networks, Inc. and Cisco Systems, Inc. have announced limited Gigabit Ethernet plans and may not deliver product until early 1998, according to the companies. Cabletron Systems, Inc. is shipping a beta version of a two-port Gigabit Ethernet uplink module for its high-end switch chassis but has not announced any other Gigabit Ethernet product plans.

3Com, however, is attacking the Gigabit Ethernet market from the get-go with its prestandard products, one analyst said. Until now, only start-up companies such as Foundry Networks, Inc., Packet Engines, Inc., Prominet Corp. and Rapid City Communications have unveiled Gigabit gear.

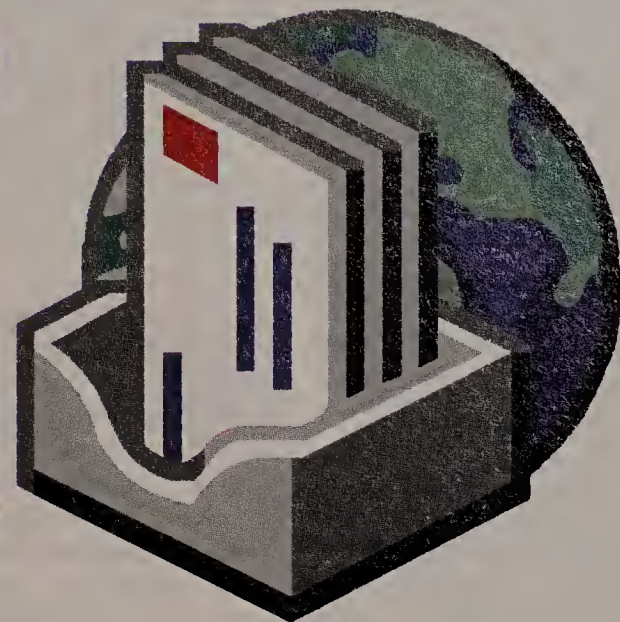
"When Intel recently blew them away with Fast Ethernet adapter price cuts, 3Com wasn't acting like a market leader," said Skip MacAskill, an analyst with consultancy Gartner Group, Inc. in Stamford, Conn. "So it seems that 3Com has learned its lesson and now is coming out of the chute very aggressively."

Product specifics

3Com's GEN family lets cus-

Microsoft Exchange Server

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outadministers,
outscales,
outfeatures,
outmails**



and generally

outinternets

**all other messaging and
collaboration systems.**

(Outrageous? Not according to the experts.)

In comparative reviews by *Network World* and *Network Computing*, Microsoft® Exchange Server prevailed over Lotus cc:Mail, Lotus Notes/Domino, and Novell GroupWise as the Internet messaging champ. Microsoft Exchange Server garnered an overall score of 8.7 on a scale of 1 to 10 in *Network World's* review. And *Network Computing*

dubbed Microsoft Exchange Server its "Editor's Choice." Further proof that Microsoft Exchange Server is the best messaging and collaboration system available today—the recent Burke Marketing Research study. It concluded that 70% of IT Administrators prefer Microsoft Exchange Server over Lotus Domino and Netscape Mail Server.

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IETF: Standardizing a revolution

A look at the Internet Engineering Task Force and its role in building the Internet.

By Chris Nerney
Memphis, Tenn.

This is the first in a two-part series.

Nearly 1,500 people will converge here this week for the 38th Internet Engineering Task Force (IETF) meeting.

That is a far cry from the 15 who turned up in San Diego for the IETF's first gathering in January 1986, back when the Internet was unknown to all but a few government workers, defense contractors and researchers.

Today, of course, almost everyone has heard of the Internet. Yet the organization most

responsible for the 'Net's development — the IETF — remains virtually invisible to the public, and even to much of the high-tech community.

Actually, the IETF is not an organization per se; rather, it is a loosely knit group of volunteers — engineers, programmers and academics — devoted to the development of Internet technology through the adoption of uniform technological specifications or standards.

And though IETFers are notorious for embracing anarchy and eschewing authority, they have evolved a standards process that has enabled the Internet to become the second largest network in the world, after the telephone system.

'A network you couldn't kill'

The modern-day IETF evolved from the community of researchers and engineers working on a request made by the U.S. Department of Defense in the late 1960s.

"They said they wanted a network that could take a nuclear strike and keep working," said Gary Malkin, an engineer with

Bay Networks, Inc. and a long-time IETF volunteer. "And we built exactly that. We built a network you couldn't kill."

The Internet came into being around 1980 when the Defense Advanced Research Projects Agency (DARPA) started converting the ARPANet to newly developed TCP/IP protocols. By 1983, the transition was complete.

Three years later, the IETF was created in San Diego after members of the Internet Activities Board — now the Internet Architecture Board (IAB) — decided to split the Gateway Architecture and Data Structures group into two entities. One group became the IETF.

Divided it stands

Since 1992, the IETF has existed as part of a small constellation of organizations operating under the auspices of the Internet Society, along with the IAB and the Internet Engineering

Steering Group (IESG).

The IETF is divided into eight functional areas: Applications, Internet, IP: Next Generation, Network Management, Operational Requirements, Routing, Security, and Transport and User Services.

THE IETF INTERNET STANDARDS TRACK

All decisions on standards are made by the Internet Engineering Steering Group (IESG), which comprises IETF area directors and the IETF chair. Here are the steps followed for specifications:

Step 1: Internet-Draft

- Specification is posted online for community review.

Step 2: Working group makes recommendation to the IESG.

Step 3: "Last call" comments are solicited from community.

Step 4: Spec receives IESG approval (or denial).

Step 5: Internet Architecture Board may hear appeals of IESG rulings.

Each area has one or two area directors who, along with the IETF/IESG chair, constitute the IESG. The IESG is the gatekeeper and decision maker in the standards process.

The bulk of the standards work done by the IETF begins with the numerous working groups organized within each of the eight functional areas.

Most of the groups' work is done on IETF mailing lists, where specification proposals are analyzed, discussed and refined. The IETF encourages open participation in the groups, and anyone can join simply by signing up for the mailing list.

When a working group decides a specification should be a 'Net standard or should advance along the IETF's standards track, the group makes a proposal to the IESG. Entry level for specifications is the "Proposed Standard," followed by "Draft Standard" and, finally, "Internet Standard."

Along each step of the process, details of the specifications, called Internet-Drafts, are posted online for study and comment by the 'Net community.

Meetings take place three times a year to allow for "cross-pollination" of functional areas, according to IETF/IESG chair Fred Baker of Cisco Systems, Inc.

For example, a working group that has been considering an applications specification can get feedback from security specialists who are not part of the working group's mailing list discussion.

"That's the reason we have plenary meetings, so we can have these hallway chats," Baker said.

Next week: The challenges of growth and commercialism.

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Network computers get real with first NCI software release

By John Cox

Redwood Shores, Calif.

The Java network computer (NC) will take a big step toward becoming reality this week, when Network Computing, Inc. (NCI), a division of Oracle Corp., makes a limited release of its server and client software.

The company's server software, which includes a range of management, security and access services, promises to be the key to creating a low-cost, centrally managed alternative to Microsoft Corp.'s Windows PCs. The client package will provide NC users with easy access to remote applications and services. Both packages are in limited release now and will be widely available in June.

"This software is critical because without it NCs are just Internet toasters," said Peter Kastner, vice president at Aberdeen Group, Inc., a technology research firm in Boston. Kastner

said the availability of software and the release of desktop NC machines mean corporate users will be able to buy and deploy NCs this year.

NCI will release two versions of the server platform. The NC Enterprise includes systems software, such as file services based on Network File System, user management utilities, security, and Java applications such as a simple spreadsheet and word processor. The server runs initially on Sun Solaris servers and in subsequent releases will run on other Unix platforms and Windows NT.

The NC Community Server is a stripped down, low-maintenance package that can be plugged into a department, small business or branch office and administered remotely through the Enterprise Server. The Community Server will run the NC OS, an operating environment based on the public

Berkeley version of Unix. NCI will begin beta-testing Community Server in June and ship the product by August.

An optional part of both server packages is the Oracle Web Application Server (WAS), which is based on Oracle's Network Computing Architecture. Developers can plug applications, called cartridges, into WAS where they can be used by client NCs.

Running on top of both versions of the NC Server is a suite of Java and HTML applications, most of which today are provided by Oracle.

The client software, called NC Access, is a set of HTML and Java applications, including a Web browser, desktop configuration tools and an operating environment. Part of NC Access is the Java Virtual Machine, which lets the NC run Java applets locally.

"We like the fact that they've built this so you can take out, for example, the Oracle-supplied browser and use Netscape," Kastner said. "Or you can plug in Corel Office for Java suite and leave the rest of the NC Access software untouched." ■

Direct marketing group lends a hand against spam

By Paul McNamara

Washington, D.C.

Some may see it as the fox volunteering to guard the henhouse.

Nevertheless, the Direct Marketing Association (DMA) is taking steps to lessen the torrent of unwanted E-mail flowing into home and workplace in-boxes.

The DMA has issued a request for proposals to develop a worldwide E-mail Preference Service that would allow users to opt out of receiving unwelcome advertising. Now, the DMA is by no means alone in trying to provide consumers with such empowerment, but the nation's oldest and largest direct marketing trade group may have the wherewithal and influence to succeed where others have foundered.

"We read the newspapers as you do, and we know that consumers are concerned about get-

ting E-mail that they don't want," said Patricia Faley, vice president of consumer affairs at the DMA.

See E-mail, page 57

CORRECTION

Due to an editing error, the meaning of one section of Scott Bradner's column (NW, March 3, page 32) could be misunderstood. The sentence should have read: "The Internet clearly can have, and is likely to have, a major destabilizing impact on civilizations and cultures maintained by controlling the access of the citizens to alternative views or to accurate news of internal events."

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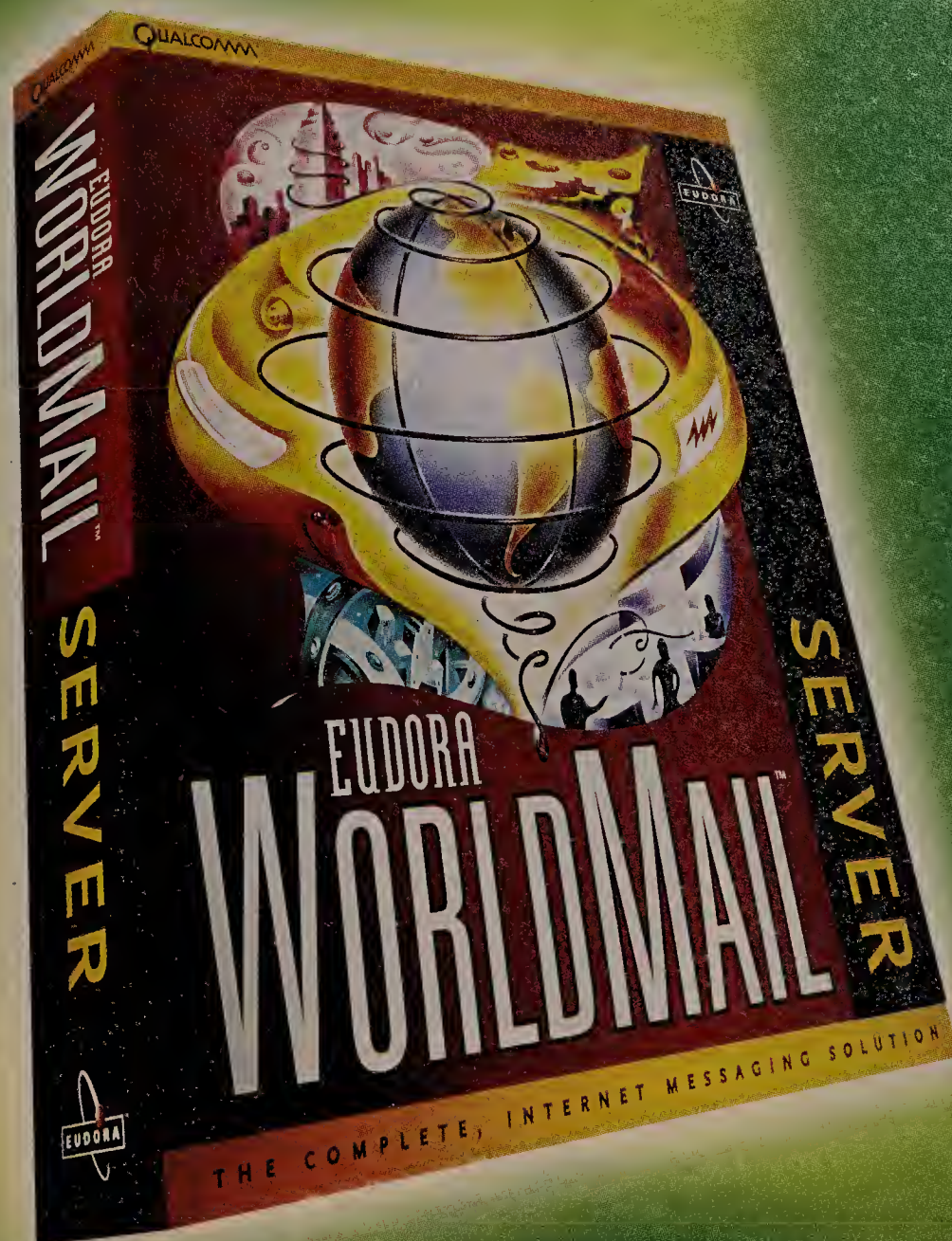
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QUALCOMM

Microsoft spills Java plans

Professing that it is giving developers the "freedom to choose," Microsoft Corp. last week at its Software Developers West conference in San Francisco served up something for just about everyone programming in the Java environment.

For corporate developers building distributed applications, Microsoft announced Enterprise Libraries for its Application Foundation Classes (AFC), chunks of pre-built code developers can drop into applications.

While the AFCs Microsoft announced in January deal strictly with creating graphical user interfaces (GUI), the newly unveiled AFC Enterprise Libraries are intended to give corporate developers access to distributed computing services, such as database access, directory, management and transaction services.

The AFC Enterprise Libraries will support Microsoft's Distributed Component Object Model (DCOM) for distributing applications across platforms and networks. Microsoft has publicly committed to deliver DCOM to multiple platforms, and last week, further professed that it would deliver DCOM in Java to ensure portability to other platforms, said Cornelius Willis, Microsoft's director of platform marketing.

For those who favor the Common Object Request Broker Architecture (CORBA) advocated by many Microsoft rivals, such as Sun Microsystems, Inc. and Netscape Communications Corp., the company said it will be working on an interoperability bridge that allows DCOM applications to use CORBA, Willis said. Microsoft and Hewlett-Packard Co. last month cosubmitted an HP-authored bridge proposal to the Object Management Group for consideration, Willis added.

The AFC Enterprise Libraries are not expected to be released until the second half of the year. The GUI Libraries were made available in prerelease form last week, with the release of Microsoft's Software Developers' Kit 2.0.

—Carol Sliwa



JavaOne

Continued from page 1

mance test program.

"[Microsoft says], 'We're 100% committed to Java, but we're not pure,'" McNealy said. "I don't think my wife would buy it if I said, 'Honey, I'm 100% committed, but I'm not pure.'"

But Gates reminded the world that other languages, such as C and even Basic, are alive and well. He also claimed that writing Java applications with all platforms in mind is only one approach, and claimed that the required middleware bloats the system, causes configuration headaches and does not exploit the full power of Windows and the underlying hardware. The client of choice then? Windows.

McNealy did not take that shot too well. He described Microsoft's Windows-oriented ActiveX technology as "immoral and unethical." Sun even staged a wide-screen live demonstration of a hostile ActiveX applet invading a victim's PC and tampering with financial information stored in Quicken.

Among the 20,000 software developers attending the Sun conference, some sported T-shirts that read "In a world without fences, who needs Gates?" Those folks have probably made up their minds. But others were struggling over the conflicting

visions outlined last week (see related stories, this page).

And those visions keep changing. In fact, Sun's JavaSoft division announced that it will overhaul the tools that define the look of Java applications. This comes just one month after JavaSoft released its Java Developers' Kit 1.1, which includes the updated Abstract Windowing Toolkit (AWT) for building graphical user interfaces (GUI).

These new Java Foundation Classes (JFC) — blocks of pre-built code that will help developers build applications — now promise to incorporate the best of Java's AWT and Netscape Communications Corp.'s Internet Foundation Classes. And

IBM also pledged to help.

Noticeably absent from this party was Microsoft, which claims it was not told about the plan until the day before the announcement.

Microsoft last week launched a preview release of its own pre-built GUI code for its Application Foundation Classes (AFC). But Microsoft is a bit in the lurch because its AFCs are built on top of the JavaSoft AWT that is being changed.

Microsoft has not decided whether it will support the new JFCs, since little is known about them now, said Cornelius Willis, Microsoft's director of platforms marketing.

"We're getting an interesting

role reversal," said David Folger, a workgroup computing strategies program director with META Group, Inc. consultancy. "Microsoft is playing the standardization rules, and Sun is taking the mindset: We own it, and we're going to change it when we feel like it."

The JFC will provide 2-D graphics, better printer support and multiplatform drag and drop. Server strategies are at the heart of the differing Java visions, Folger said. Microsoft advocates its Distributed Component Object Model for distributing objects/applications. Sun and its allies take the Common Object Request Broker Architecture tack. ■

Sun unit promises new Java spec by summer

Although the most recent Java specification, in the form of the Java Developers' Kit (JDK) 1.1, came out just a month ago, Sun Microsystems, Inc.'s JavaSoft unit last week laid out plans to have another new version of Java in place by midsummer.

Dissatisfied with the graphics in the JDK 1.1, JavaSoft is working with Netscape Communications Corp. and IBM to design a set of new graphics functions called the Java Foundation Classes (JFC). Today, the JFCs are based on the JDK 1.1's Abstract Windowing Toolkit (AWT).

"Feedback from programmers told us the look and feel in the AWT is too rigid," said James Gosling, Sun vice president and the inventor of Java, last week.

Rick Schell, senior vice president and general manager of the platform division at Netscape, said the company will be migrating customers from its own Internet Foundation Classes (IFC)

in order to unite with Sun around the JFC and prevent "confusion" for software developers who are faced with choosing between the two methods.

JavaSoft is also changing its "sandbox" security model somewhat so administrators can install server software that checks an applet's digital signature, and checks the URL associated with it.

Sun's myriad other announcements included:

- Enterprise JavaBeans, a technology initiative that calls for a common framework for transaction processing in Java. A draft specification is expected out this summer and a final version is expected at year-end.

- JavaPC, software for converting older DOS PCs into network computers. It will be available this fall and costs approximately \$100.

—Ellen Messmer

Novell

Continued from page 1

look to the 'Net as a vehicle for electronic commerce.

Meta Connect 3270 software, being developed by Novell's corporate research division, sits on a server machine running IntranetWare, the Novell Web Server and NetWare for SAA, Novell and IBM's PC-to-host gateway. Meta Connect 3270, acting as a bridge between the Web server and the gateway, converts 3270 datastreams into HTML format that can be viewed by any browser. The legacy data can be served up as a 3270 green screen or integrated into a graphical Web page using off-the-shelf Web page development tools.

The Meta Connect 3270's server-based approach alleviates maintaining customized 3270 emulation software and Java-based applets that provide similar 3270-to-HTML functions on every desktop, said David Hol-

brook, director of marketing for host connectivity at Novell.

NetWare for SAA supports most server and client-based 3270-to-HTML translators, such as IBM's Host on Demand or Attachmate Corp.'s Host Publishing System. Holbrook said Meta Connect 3270's tight integration with NetWare for SAA will give it a performance edge.

Don Czubek, president of

Gen2 Ventures in Saratoga, Calif., said Novell must offer more than speed. "There is a new company in this market weekly," Czubek said. "Novell must tap its strong directory and security reputation to differentiate themselves."

Czubek noted that Microsoft Corp. is working on a set of Web-to-host products — code-named Thor and CakeWalk — that run

on NT Server with integrated security and directory ties, giving users a single logon to local, host and Web resources.

Holbrook said the first release of Meta Connect 3270 will not have ties to Novell Directory Services (NDS), forcing users to log on to legacy applications as a separate process. However, when NDS runs natively over IP in the next release of IntranetWare next year, Novell will build extensions to Meta Connect 3270 that support directory integration.

Some users, however, are ready for directory ties now.

"It would be nice to get at the mainframe through the Web because a lot of our stuff is moving in that direction," said David Hasselbach, a network engineer at the University of Michigan Medical Center in Ann Arbor. "But if I can't tie those host sessions to specific workstation objects in the directory, it's of no use to me."

© Novell: (800) 638-9273

The crowded field of Web-to-host access wares

Company	Product	Runs on
Apertus	Enterprise/Connect	AIX and Solaris
Attachmate	EXTRA Host Publishing System	Windows NT Server
IBM	Host on Demand	OS/2 Warp Server and Windows NT Server
Microsoft	CakeWalk*	Windows NT Server
Novell	Meta Connect 3270*	IntranetWare
OpenConnect Systems	OC://WebConnect	AIX, HP-UX, Solaris and Windows NT Server
Teubner & Associates	Corridor	OS/2 Warp Server and AIX

* Code name

Cisco

Continued from page 1

less link for regions where users are looking to bypass wireline service providers.

The wireless module was developed by Netro Corp. of Santa Clara, Calif., which recently announced a similar mux called the AirMAN3000 wireless ATM access concentrator.

The 3800 is designed to help users and carriers address metropolitan area network and last-mile needs. The last mile represents a particular dilemma for carriers because they must provision a range of equipment to support the growing number of voice, data and multimedia services customers demand.

Installing, integrating and maintaining that equipment is difficult and expensive. The 3800 is designed as a cost-effective alternative, enabling carriers to offer multiple services from the same platform.

"We're looking at ways to use the ATM cloud that we've built to deliver additional services," said Don Pace, project engineer for Sprint Corp. in Tallahassee, Fla. "Things like the 3800 will probably do [that]."

The 3800 will come in three flavors: one-, three- and eight-slot chassis, each sporting a 1G bit/sec ATM and a 16M bit/sec time-division multiplexed bus, sources said. In addition to the 8M bit/sec wireless trunk, these chassis will house modules that feature support for analog

and digital voice, frame relay, ATM and an Ethernet or token-ring router (see graphic, page 1).

The 3800 will cost from less than \$10,000 to approximately \$30,000, depending on configuration, sources said. Cisco declined to comment.

"Cisco has to be able to provide some ATM mux capability just to ensure it has a

complete product line, particularly given the fact that [Cisco] now has to compete with the merged Ascend," said John Morency, principal at The Registry, Inc., a Newton, Mass.-based consultancy.

Indeed, the market for broadband Internet access is heating up. In addition to Ascend, Cisco and Netro, Xedia Corp. last week announced AccessPoint, a

device that combines routing and a flow classification queuing algorithm to link Fast Ethernet LANs to the Internet over 45M bit/sec DS-3 and 155M bit/sec OC-3 links.

AccessPoint costs between \$15,000 and \$20,000 and will ship in June.

© Cisco: (408) 526-4000; Xedia: (508) 952-6000

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Got Frame Relay Management on Your Mind?

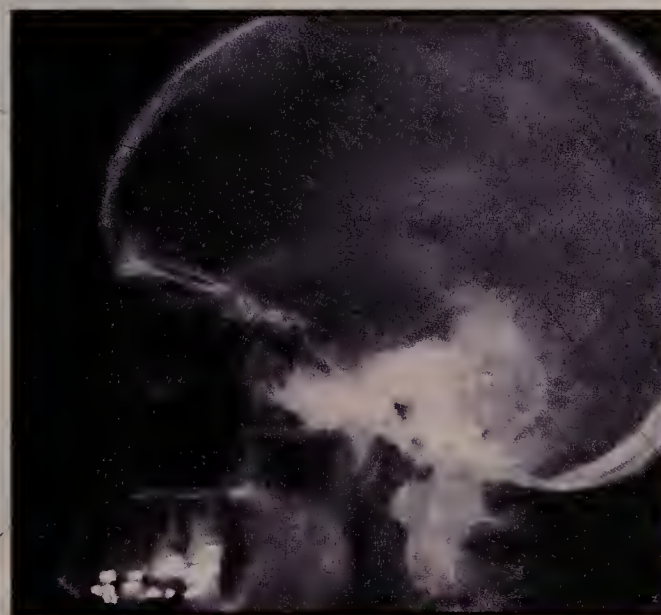
I need proactive tools that maximize network availability.

How do I know how much bandwidth I need?

How do I know I'm getting what I paid for from my carrier?

I want to leverage my enterprise management platform.

How can I manage without Sync Circuit Management?



7200 and LS 1010 users don't need 3800

Cisco Systems, Inc. is not putting all of its broadband access eggs into the 3800 basket. Last week, the company rolled out products that obviate the need for a device like the 3800.

As expected, Cisco announced circuit emulation modules for its 7200 series routers and LightStream 1010 ATM switches that enable users to integrate voice, video and data traffic over public or private high-speed ATM backbones (NW, Jan. 27, page 1).

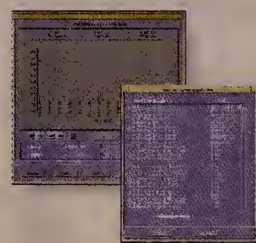
"If we use the circuit emulation cards as opposed to the other alternative, which are things like cell multiplexers, it turns out to be quite a bit cheaper, and there's less equipment to manage and maintain," said Carl Harris, communication systems engineer at Virginia Polytechnic Institute and State University in Blacksburg, Va.

T-1 circuit emulation adapters for the 7200 cost between \$12,000 and \$14,000 and will be available in June. The E-1 versions, for which prices were not disclosed, will be available in the third quarter.

T-1 and E-1 circuit emulation modules for the LightStream 1010 cost \$4,950 apiece and are available now.

—Jim Duffy

Think Sync.



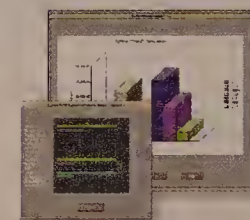
Managing your frame relay network can be mind-boggling. Sync's Frame Relay Access Probe (FRAP) and graphical enterprise management applications provide advanced circuit management func-

tions that let you examine the vast reaches of your network. You will gain insight to potential problems that can threaten your network's cost-effectiveness, performance and availability.

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tures. Detailed views of end-to-end network connectivity, bandwidth utilization, network and application level traffic—such as SNA, TCP/IP, browser and file transfers—and web-based reporting, will always keep you in the know.

If you have frame relay management on your mind, Think Sync. Call today for an informative white paper on circuit management. It will be one less thing to think about.

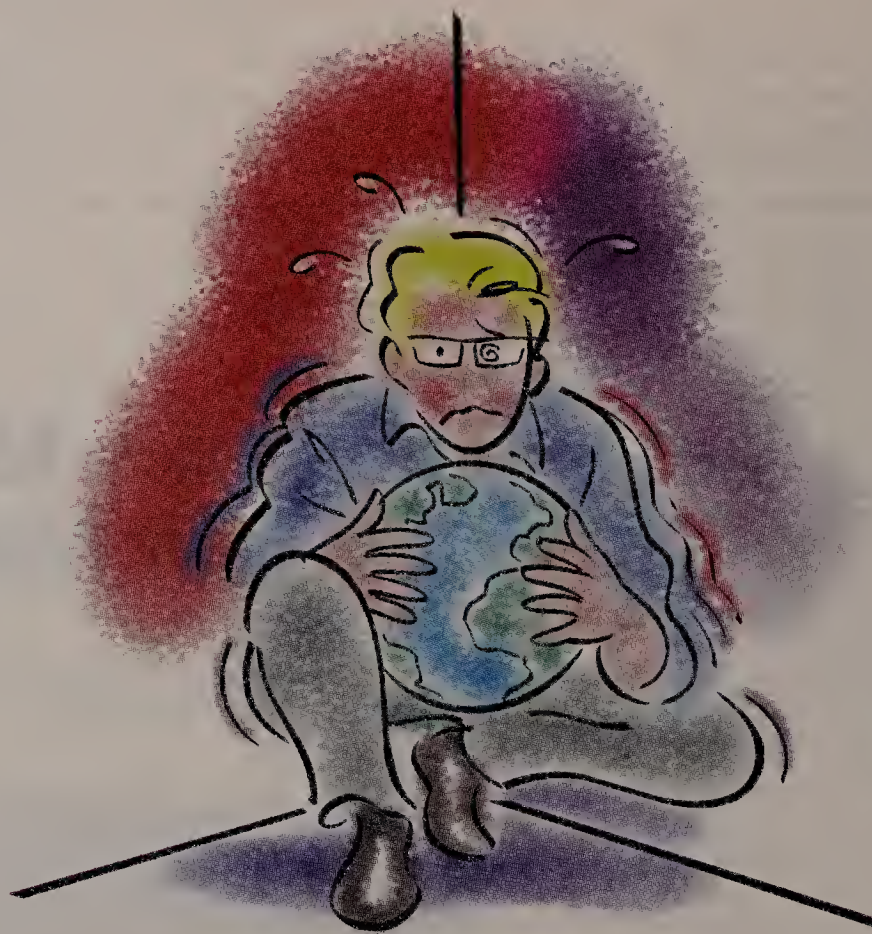


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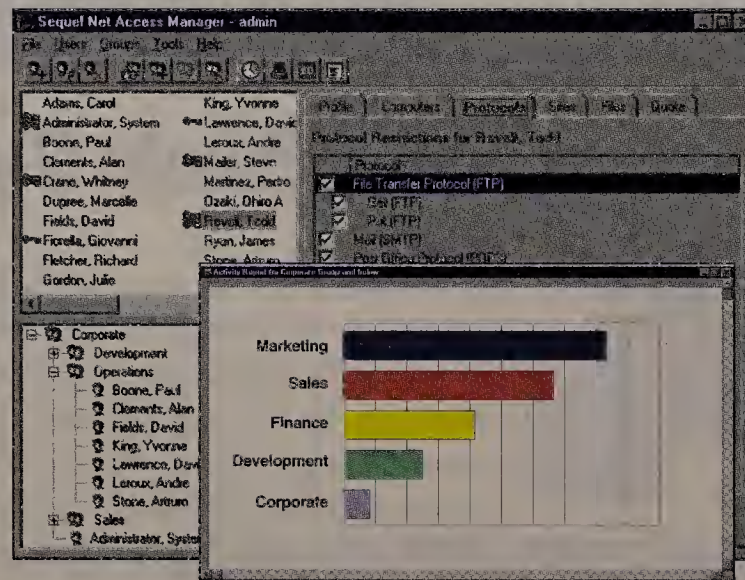
Sequel Net Access Manager is the most effective tool to manage and report Internet and intranet usage. It monitors and logs all traffic and service requests so you can review employee activity with the same ease that you review your phone bill.

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You can even manage access to increase security, productivity and limit legal exposure by assigning or denying access to the Web, FTP, mail, and news—to name a few—on a corporate, group or individual basis.

Sequel

NET ACCESS MANAGER™

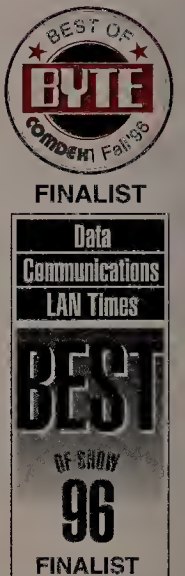


Sequel Net Access Manager lets you manage Internet and intranet usage, reconcile costs with detailed reports, limit legal exposure and increase network security.

Sequel Net Access Manager is even designed to minimize the administrative burden on IS. Set up is a breeze. Departmental managers can be assigned to manage individual access privileges and maintain site control lists.

Sequel Net Access Manager is a server based application and is available for Microsoft Windows NT™ Server 3.51 and

4.0 and Microsoft SQL Server 6.0 and 6.5. The Sequel Net Access Manager Client Administrator can be installed on Microsoft Windows 95 or Microsoft Windows NT Workstation 3.51 or 4.0.



"If you're a network manager or executive who wants to understand Internet-usage patterns or to block access to certain Web sites, take a good look at Net Access Manager."

Windows Sources, November 1996

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Business FAX (_____) _____

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1 Industry: (check one only)

- | | |
|---|--|
| 01. <input type="checkbox"/> Manufacturers (other) | 12. <input type="checkbox"/> Government (Federal/State/Local) |
| 02. <input type="checkbox"/> Finance/Banking | 13. <input type="checkbox"/> Military |
| 03. <input type="checkbox"/> Insurance/Real Estate/Legal | 14. <input type="checkbox"/> Aerospace |
| 04. <input type="checkbox"/> Health Care Services | 15. <input type="checkbox"/> Consultants (Independent) |
| 05. <input type="checkbox"/> Hospitality/Entertainment/Recreation | 16. <input type="checkbox"/> Carriers/Interconnects |
| 06. <input type="checkbox"/> Media/TV/Cable/Radio/Print | 17. <input type="checkbox"/> Manufacturers (Computer/Communications) |
| 07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services | 18. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs) |
| 08. <input type="checkbox"/> Transportation | 19. <input type="checkbox"/> Systems/Network Integrators |
| 09. <input type="checkbox"/> Utilities | 20. <input type="checkbox"/> Distributors (Computer/Communications) |
| 10. <input type="checkbox"/> Education | 21. <input type="checkbox"/> Other (please specify) _____ |
| 11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry) | |

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

- | | |
|---|--|
| 1. <input type="checkbox"/> Networking Management | 5. <input type="checkbox"/> Engineering Management |
| 2. <input type="checkbox"/> LAN Management | 6. <input type="checkbox"/> Corporate Management (CIO, CEO, Pres., VP, Dir., Mgr., Financial Management) |
| 3. <input type="checkbox"/> Datacom/Telecom Management | 7. <input type="checkbox"/> Consultant (Independent) |
| 4. <input type="checkbox"/> IS, IT, MIS, Systems Management | 8. <input type="checkbox"/> Other (please specify) _____ |

3 What is the estimated value of networking equipment and services that you help specify, recommend or approve? (check one only)

- | | | |
|--|--|--|
| 01. <input type="checkbox"/> \$100 million or more | 05. <input type="checkbox"/> \$10 mil. - \$19.9 mil. | 09. <input type="checkbox"/> \$250,000 - \$499,999 |
| 02. <input type="checkbox"/> \$50 mil. - \$99.9 mil. | 06. <input type="checkbox"/> \$5 mil. - \$9.9 mil. | 10. <input type="checkbox"/> \$100,000 - \$249,999 |
| 03. <input type="checkbox"/> \$25 mil. - \$49.9 mil. | 07. <input type="checkbox"/> \$1 mil. - \$4.9 mil. | 11. <input type="checkbox"/> None of the above |
| 04. <input type="checkbox"/> \$20 mil. - \$24.9 mil. | 08. <input type="checkbox"/> \$500,000 - \$999,999 | |

4 What is the total number of sites for which you have purchase influence? (check one only)

- | | | |
|-------------------------------------|-------------------------------------|----------------------------------|
| 1. <input type="checkbox"/> 100+ | 4. <input type="checkbox"/> 10 - 19 | 7. <input type="checkbox"/> None |
| 2. <input type="checkbox"/> 50 - 99 | 5. <input type="checkbox"/> 2 - 9 | |
| 3. <input type="checkbox"/> 20 - 49 | 6. <input type="checkbox"/> 1 | |

5 Are you involved in the purchase of and/or plan to purchase network products and services?

☐ Yes ☐ No

6 Check ALL that apply in Columns A and B:

A. I am involved in the purchase of the following products/services:

B. I plan to purchase the following products/services:

LOCAL-AREA NETWORKS

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 01. | <input type="checkbox"/> Local-Area Networks |
| <input type="checkbox"/> 02. | <input type="checkbox"/> Network Op. Sys. Software |
| <input type="checkbox"/> 03. | <input type="checkbox"/> LAN Storage/Backup |
| <input type="checkbox"/> 04. | <input type="checkbox"/> Optical LAN Storage/Backup |
| <input type="checkbox"/> 05. | <input type="checkbox"/> Disk LAN Storage/Backup |
| <input type="checkbox"/> 06. | <input type="checkbox"/> Tape LAN Storage/Backup |
| <input type="checkbox"/> 07. | <input type="checkbox"/> RAID LAN Storage/Backup |
| <input type="checkbox"/> 08. | <input type="checkbox"/> Network Test/Diagnostic Tools |
| <input type="checkbox"/> 09. | <input type="checkbox"/> Cables, Connectors, Baluns |
| <input type="checkbox"/> 10. | <input type="checkbox"/> UPS |
| <input type="checkbox"/> 11. | <input type="checkbox"/> Network Interface Cards |
| <input type="checkbox"/> 12. | <input type="checkbox"/> Peer-to-Peer LANs |
| <input type="checkbox"/> 13. | <input type="checkbox"/> SNMP Network Management |
| <input type="checkbox"/> 14. | <input type="checkbox"/> ATM Switches |
| <input type="checkbox"/> 15. | <input type="checkbox"/> Token-Ring Switches |
| <input type="checkbox"/> 16. | <input type="checkbox"/> Ethernet Switches |
| <input type="checkbox"/> 17. | <input type="checkbox"/> Remote LAN Access/Communications Servers |
| <input type="checkbox"/> 18. | <input type="checkbox"/> Superservers |
| <input type="checkbox"/> 19. | <input type="checkbox"/> File/Application Servers |
| <input type="checkbox"/> 20. | <input type="checkbox"/> Print Servers/Fax Servers |
| <input type="checkbox"/> 21. | <input type="checkbox"/> CD-ROM Servers |
| <input type="checkbox"/> 22. | <input type="checkbox"/> LAN Servers |

INTERNETWORKING

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 23. | <input type="checkbox"/> Bridges |
| <input type="checkbox"/> 24. | <input type="checkbox"/> Routers |
| <input type="checkbox"/> 25. | <input type="checkbox"/> Bridge/Router |
| <input type="checkbox"/> 26. | <input type="checkbox"/> Gateways |
| <input type="checkbox"/> 27. | <input type="checkbox"/> Intelligent Hubs |
| <input type="checkbox"/> 28. | <input type="checkbox"/> Stackable Hubs |

COMPUTERS/PERIPHERALS

- | | |
|------------------------------|--|
| A | B |
| <input type="checkbox"/> 29. | <input type="checkbox"/> Laptops/Notebooks/Sub-Notebooks |
| <input type="checkbox"/> 30. | <input type="checkbox"/> Micros/PCs |
| <input type="checkbox"/> 31. | <input type="checkbox"/> Minis |
| <input type="checkbox"/> 32. | <input type="checkbox"/> Mainframes |
| <input type="checkbox"/> 33. | <input type="checkbox"/> Workstations |
| <input type="checkbox"/> 34. | <input type="checkbox"/> Terminals |
| <input type="checkbox"/> 35. | <input type="checkbox"/> Printers/Network Printers |
| <input type="checkbox"/> 36. | <input type="checkbox"/> Cluster Controllers |
| <input type="checkbox"/> 37. | <input type="checkbox"/> CD-ROM |
| <input type="checkbox"/> 38. | <input type="checkbox"/> Fax/Modem Boards |

REMOTE/WIRELESS COMPUTING

- | | |
|------------------------------|--|
| A | B |
| <input type="checkbox"/> 39. | <input type="checkbox"/> PDAs |
| <input type="checkbox"/> 40. | <input type="checkbox"/> PCMCIA Devices |
| <input type="checkbox"/> 41. | <input type="checkbox"/> Wireless Data Services |
| <input type="checkbox"/> 42. | <input type="checkbox"/> Wireless Data Equipment |
| <input type="checkbox"/> 43. | <input type="checkbox"/> Wireless LANs |
| <input type="checkbox"/> 44. | <input type="checkbox"/> Cellular Equipment & Services |

INTERNET/INTRANET

- | | |
|------------------------------|--|
| A | B |
| <input type="checkbox"/> 45. | <input type="checkbox"/> Internet Access Service |
| <input type="checkbox"/> 46. | <input type="checkbox"/> Firewalls/Security |
| <input type="checkbox"/> 47. | <input type="checkbox"/> Web Servers |

INTERNET/INTRANET (cont'd)

- | | |
|------------------------------|--|
| A | B |
| <input type="checkbox"/> 48. | <input type="checkbox"/> Web Browsers |
| <input type="checkbox"/> 49. | <input type="checkbox"/> Intranet Applications/Groupware |
| <input type="checkbox"/> 50. | <input type="checkbox"/> Search Retrieval Products (web crawler) |
| <input type="checkbox"/> 51. | <input type="checkbox"/> Internet Development Tools |
| <input type="checkbox"/> 52. | <input type="checkbox"/> Internet Commerce Tools |

SOFTWARE/APPLICATIONS

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 53. | <input type="checkbox"/> Network Management |
| <input type="checkbox"/> 54. | <input type="checkbox"/> Systems Management |
| <input type="checkbox"/> 55. | <input type="checkbox"/> Security |
| <input type="checkbox"/> 56. | <input type="checkbox"/> Communications Software |
| <input type="checkbox"/> 57. | <input type="checkbox"/> Terminal Emulation |
| <input type="checkbox"/> 58. | <input type="checkbox"/> Word Processing |
| <input type="checkbox"/> 59. | <input type="checkbox"/> Operating Systems |
| <input type="checkbox"/> 60. | <input type="checkbox"/> Client/Server Applications Development |
| <input type="checkbox"/> 61. | <input type="checkbox"/> Database Management/RDBMS |
| <input type="checkbox"/> 62. | <input type="checkbox"/> Spreadsheet |
| <input type="checkbox"/> 63. | <input type="checkbox"/> Groupware |
| <input type="checkbox"/> 64. | <input type="checkbox"/> EDI |
| <input type="checkbox"/> 65. | <input type="checkbox"/> E-mail |
| <input type="checkbox"/> 66. | <input type="checkbox"/> Windows/Graphical User Interface |
| <input type="checkbox"/> 67. | <input type="checkbox"/> Multimedia |
| <input type="checkbox"/> 68. | <input type="checkbox"/> Graphics/DTP |
| <input type="checkbox"/> 69. | <input type="checkbox"/> Remote Access |
| <input type="checkbox"/> 70. | <input type="checkbox"/> Imaging |
| <input type="checkbox"/> 71. | <input type="checkbox"/> Server Suites (Back office, etc.) |
| <input type="checkbox"/> 72. | <input type="checkbox"/> Suites |
| <input type="checkbox"/> 73. | <input type="checkbox"/> Middleware |
| <input type="checkbox"/> 74. | <input type="checkbox"/> Document Management |
| <input type="checkbox"/> 75. | <input type="checkbox"/> Database Server |
| <input type="checkbox"/> 76. | <input type="checkbox"/> Site Metering Tools |
| <input type="checkbox"/> 77. | <input type="checkbox"/> Computer-Integrated Telephony (CIT) |

WIDE-AREA NETWORK EQUIPMENT & SERVICES

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 78. | <input type="checkbox"/> Frame Relay Equip./Services |
| <input type="checkbox"/> 79. | <input type="checkbox"/> Modems |
| <input type="checkbox"/> 80. | <input type="checkbox"/> FT-1/T-1/T-3 Multiplexers |
| <input type="checkbox"/> 81. | <input type="checkbox"/> FT-1/T-1/T-3 Services |
| <input type="checkbox"/> 82. | <input type="checkbox"/> SONET |
| <input type="checkbox"/> 83. | <input type="checkbox"/> Inverse Multiplexers |
| <input type="checkbox"/> 84. | <input type="checkbox"/> SMDS |
| <input type="checkbox"/> 85. | <input type="checkbox"/> Asynchronous Transfer Mode |
| <input type="checkbox"/> 86. | <input type="checkbox"/> Diagnostic/Test Equipment |
| <input type="checkbox"/> 87. | <input type="checkbox"/> DSU/CSU |
| <input type="checkbox"/> 88. | <input type="checkbox"/> VSAT/Satellite |
| <input type="checkbox"/> 89. | <input type="checkbox"/> ISDN Equipment & Services |
| <input type="checkbox"/> 90. | <input type="checkbox"/> PBXs |
| <input type="checkbox"/> 91. | <input type="checkbox"/> Voice Mail/Response |
| <input type="checkbox"/> 92. | <input type="checkbox"/> Videoconferencing |
| <input type="checkbox"/> 93. | <input type="checkbox"/> Leased Lines |
| <input type="checkbox"/> 94. | <input type="checkbox"/> Switched Data |
| <input type="checkbox"/> 95. | <input type="checkbox"/> E-mail |
| <input type="checkbox"/> 96. | <input type="checkbox"/> 800/900/MTS Services |
| <input type="checkbox"/> 97. | <input type="checkbox"/> Virtual Networks |
| <input type="checkbox"/> 98. | <input type="checkbox"/> Outsourcing/Systems Integration Services |
| <input type="checkbox"/> 99. | <input type="checkbox"/> Education/Training Services |

☐ 107 ☐ None of the above (1-99)

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7 Check ALL that apply in Columns A and B:

A. The following network platforms are currently installed:

B. The following network platforms are planned for purchase:

NETWORK PROTOCOLS

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 01. | <input type="checkbox"/> SNA |
| <input type="checkbox"/> 02. | <input type="checkbox"/> DECnet |
| <input type="checkbox"/> 03. | <input type="checkbox"/> TCP/IP |
| <input type="checkbox"/> 04. | <input type="checkbox"/> Novell IPX/SPX |
| <input type="checkbox"/> 05. | <input type="checkbox"/> APPC/APPN/LU 6.2 |
| <input type="checkbox"/> 06. | <input type="checkbox"/> NETBIOS |
| <input type="checkbox"/> 07. | <input type="checkbox"/> AppleTalk |
| <input type="checkbox"/> 08. | <input type="checkbox"/> NFS |
| <input type="checkbox"/> 09. | <input type="checkbox"/> IPv6 |
| <input type="checkbox"/> 10. | <input type="checkbox"/> SNMP/SNMPv2 |
| <input type="checkbox"/> 11. | <input type="checkbox"/> Other (please specify) _____ |

NETWORK OPERATING SYSTEM

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 12. | <input type="checkbox"/> Microsoft (LAN Manager) |
| <input type="checkbox"/> 13. | <input type="checkbox"/> Novell (NetWare 2.X, 3.X) |
| <input type="checkbox"/> 14. | <input type="checkbox"/> Novell (NetWare 4.X) |
| <input type="checkbox"/> 15. | <input type="checkbox"/> Windows NT |
| <input type="checkbox"/> 16. | <input type="checkbox"/> Windows NT/Advanced Server |
| <input type="checkbox"/> 17. | <input type="checkbox"/> LocalTalk (AppleTalk) |
| <input type="checkbox"/> 18. | <input type="checkbox"/> Banyan (VINES) |
| <input type="checkbox"/> 19. | <input type="checkbox"/> IBM (LAN Server) |
| <input type="checkbox"/> 20. | <input type="checkbox"/> IBM (PC LAN Program) |
| <input type="checkbox"/> 21. | <input type="checkbox"/> Artisoft (LANtastic) |
| <input type="checkbox"/> 22. | <input type="checkbox"/> Digital (Pathworks) |
| <input type="checkbox"/> 23. | <input type="checkbox"/> Other (please specify) _____ |

LAN ENVIRONMENT

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 24. | <input type="checkbox"/> 4M Token Ring |
| <input type="checkbox"/> 25. | <input type="checkbox"/> 16M Token Ring |
| <input type="checkbox"/> 26. | <input type="checkbox"/> Ethernet |
| <input type="checkbox"/> 27. | <input type="checkbox"/> Fast Ethernet |
| <input type="checkbox"/> 28. | <input type="checkbox"/> 100vg Any LAN |
| <input type="checkbox"/> 29. | <input type="checkbox"/> FDDI |
| <input type="checkbox"/> 30. | <input type="checkbox"/> LocalTalk |
| <input type="checkbox"/> 31. | <input type="checkbox"/> 10Base-T |
| <input type="checkbox"/> 32. | <input type="checkbox"/> ATM |
| <input type="checkbox"/> 33. | <input type="checkbox"/> Other (please specify) _____ |

COMPUTER OPERATING SYSTEM

- | | |
|------------------------------|---|
| A | B |
| <input type="checkbox"/> 34. | <input type="checkbox"/> DOS |
| <input type="checkbox"/> 35. | <input type="checkbox"/> Unix/Xenix/AIX |
| <input type="checkbox"/> 36. | <input type="checkbox"/> OS/2 |
| <input type="checkbox"/> 37. | <input type="checkbox"/> OS/2 Warp |
| <input type="checkbox"/> 38. | <input type="checkbox"/> IBM MVS |
| <input type="checkbox"/> 39. | <input type="checkbox"/> IBM VM |
| <input type="checkbox"/> 40. | <input type="checkbox"/> Digital VMS |
| <input type="checkbox"/> 41. | <input type="checkbox"/> Macintosh |
| <input type="checkbox"/> 42. | <input type="checkbox"/> Windows |
| <input type="checkbox"/> 43. | <input type="checkbox"/> Windows 95 |
| <input type="checkbox"/> 44. | <input type="checkbox"/> NT |
| <input type="checkbox"/> 45. | <input type="checkbox"/> Solaris |
| <input type="checkbox"/> 46. | <input type="checkbox"/> Other (please specify) _____ |

☐ 47. ☐ None of the above (1-46)

8 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE

(check one only)

- ☐ 1. Corporate/Enterprise
☐ 2. Department
☐ 3. None

B. INVOLVEMENT (check all that apply)

- ☐ 1. Recommend/Specify
☐ 2. Approve
☐ 3. Evaluate
☐ 4. Determine the need
☐ 5. None

9 What is the total number of LANs, workstations/nodes at this location/ in your organization?

At this location:

LANs

- | | |
|---|--------------------------|
| 1. <input type="checkbox"/> 5,000+ | <input type="checkbox"/> |
| 2. <input type="checkbox"/> 1,000 - 4,999 | <input type="checkbox"/> |
| 3. <input type="checkbox"/> 100 - 999 | <input type="checkbox"/> |
| 4. <input type="checkbox"/> 50 - 99 | <input type="checkbox"/> |
| 5. <input type="checkbox"/> 10 - 49 | <input type="checkbox"/> |
| 6. <input type="checkbox"/> 1 - 9 | <input type="checkbox"/> |

Workstations/ Nodes

- | | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

Entire organization:

LANs

- | | |
|---|--------------------------|
| 1. <input type="checkbox"/> 5,000+ | <input type="checkbox"/> |
| 2. <input type="checkbox"/> 1,000 - 4,999 | <input type="checkbox"/> |
| 3. <input type="checkbox"/> 100 - 999 | <input type="checkbox"/> |
| 4. <input type="checkbox"/> 50 - 99 | <input type="checkbox"/> |
| 5. <input type="checkbox"/> 10 - 49 | <input type="checkbox"/> |
| 6. <input type="checkbox"/> 1 - 9 | <input type="checkbox"/> |

Workstations/ Nodes

- | | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

10 Please indicate your involvement in developing/implementing Internet/ Intranet Technologies: (check all that apply)

- | | | |
|--|---------------------------------------|--------------------------------------|
| <input type="checkbox"/> 1. Recommend/Specify | <input type="checkbox"/> 2. Approve | <input type="checkbox"/> 3. Evaluate |
| <input type="checkbox"/> 4. Determine the need | <input type="checkbox"/> 5. Implement | <input type="checkbox"/> 6. None |

11 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

Mainframes

A - Installed B - Planned

- | | | |
|------------|--------------------------|--------------------------|
| 1. IBM | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Amdahl | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Cray | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Hitachi | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Unisys | <input type="checkbox"/> | <input type="checkbox"/> |

Minis

C - Installed D - Planned

- | | | |
|-----------------|--------------------------|--------------------------|
| 1. IBM | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Digital | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Tandem | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Unisys | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. AT&T GIS | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. HP | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Data General | <input type="checkbox"/> | <input type="checkbox"/> |

12 What is the total number of Servers/Clients installed/planned: (USE NUMBERS ONLY)

E-AT THIS LOCATION

- | | |
|------------|--------------------------|
| # | F-% with Internet Access |
| 1. Servers | <input type="text"/> % |
| 2. Clients | <input type="text"/> % |

G-ENTIRE ORGANIZATION

- | | |
|------------|--------------------------|
| # | H-% with Internet Access |
| 1. Servers | <input type="text"/> % |
| 2. Clients | <input type="text"/> % |

13 Which of the following Servers/Clients do you have installed/planned: (CHECK ALL THAT APPLY)

- | | | | | |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | At this location: | Entire organization: | | |
| | I-Servers | J-Clients | K-Servers | L-Clients |
| 01. Power PC | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 02. Power Mac | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 03. Mac Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 04. Multi Processor Servers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 05. P6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 06. Pentium Pro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 07. Pentium | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 08. 486 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 09. 386 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. 286 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Risc | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

12 Estimated gross annual revenue of your entire company/institution: (check one only)

- | | | |
|--|--|--|
| 1. <input type="checkbox"/> \$10 billion or more | 4. <input type="checkbox"/> \$100 million to \$499.9 million | 7. <input type="checkbox"/> \$5 million to \$9.9 million |
| 2. <input type="checkbox"/> \$1 billion to \$9.9 billion | 5. <input type="checkbox"/> \$50 million to \$99.9 million | 8. <input type="checkbox"/> \$4.9 million or less |
| 3. <input type="checkbox"/> \$500 million to \$999.9 million | 6. <input type="checkbox"/> \$10 million to \$49.9 million | 9. <input type="checkbox"/> None of the above |

13 Estimated number of employees at this location/in entire organization:

At this location:

- ||
||
||

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3. PLEASE TAPE HERE

2. FOLD HERE & MAIL TODAY



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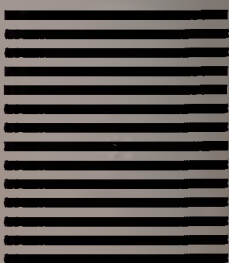
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WANs & Internetworking

Covering: Network Architectures and Management • Routers • Muxes, Remote Access Gear, Modems, PBXs and other CPE • Mobile Computing Products

Briefs

■ **Stallion Technologies, Inc.** last week introduced **LantraServer**, a **remote access server (RAS)** based on Windows NT's RAS. The server incorporates four serial ports with top speeds of 230K bit/sec and four V.34 modem ports. Available now, Lantra-Server costs \$2,495.

© Stallion: (408) 477-0440

■ **Loran International Technologies, Inc.** is shipping the **Kinnetics Enterprise Network Manager**, software that provides real-time discover, physical topology mapping, tracking and analysis of enterprise networks. Kinnetics is said to **pinpoint faults** within 6 minutes, regardless of network size or geography.

Kinnetics uses less than .5% of Ethernet bandwidth to collect a timed series of network snapshots with which an operator can compare present network behavior and predict future performance.

Kinnetics is priced between \$8,300 and \$53,650.

© Loran: (703) 749-5010

■ **NetOps Corp.** rolled out a network management service designed to detect failures before they occur.

NetOps' Network Analysis Service lets network managers **monitor active devices** without taxing network bandwidth, identify imminent failures and recommend preventive measures to reduce downtime, the company said.

The service is capable of monitoring about 10,000 status indicators per second on a "typical" network, according to the company.

Pricing for Network Analysis Service starts at \$50,000 per year. It is available now.

© NetOps: (203) 746-7802

Smart DSUs/CSUs are the wise thing to do

DSUs can analyze frame relay traffic, net performance.

By Tim Greene

A new breed of DSUs/CSUs not only lets users fine-tune their frame relay networks to save money, but also helps them keep an eye on how well carriers are delivering what they say they will.

This week, ADC Kentrox is introducing an entire line of DSUs/CSUs, called Frame-Vision, that lets users probe their wide-area frame relay links to better tailor them to network traffic.

amount of guesswork.

But using smart DSUs/CSUs in combination with network monitoring services from carriers, users can monitor traffic per PVC to set appropriate CIRs and allowable burst rates on each circuit.

By better managing bandwidth, users can save money.

The smart DSUs/CSUs also reduce downtime, according to

Roger Hall, data communications operations manager at Wheat, First, Butcher, Singer, a stock brokerage in Richmond, Va. "It cuts the time spent diagnosing and means less manpower," said Hall, whose 130-node network uses Visual Networks gear.

Smart DSUs/CSUs can also minimize finger-pointing by helping users nail down where trouble lies before calling in their carrier, he said.

ADC Kentrox's DataSMART 680 features a single T-1 or frac-

"[Smart DSUs/CSUs] cuts the time spent diagnosing and means less manpower," said Hall of Wheat, First, Butcher, Singer.

tional T-1 wide-area port and a single data port. The device is interoperable with frame network monitoring software from Concord Communications, Inc., DeskTalk Systems, Inc. and Kaspia Systems, Inc. When those systems are supported by a carrier, DataSMART 680 can give a view of elements of carrier network performance.

The DataSMART 680 will ship April 10 and costs \$2,395.

© ADC Kentrox: (503) 643-1681

Net tool vendors unveil new wares

By Jim Duffy

Two vendors of network monitoring tools last week unveiled software offerings that enable users to track application response time and gauge network uptime.

Optimal Networks Corp. rolled out Optimal Application Expert, a Windows-based distributed application performance analyzer. Ipswitch, Inc. unwrapped WhatsUp Gold, a more scalable version of its WhatsUp monitoring software, to track the uptime of large networks.

Optimal Application Expert monitors, analyzes, reports and models application traffic. The product analyzes the entire life cycle of an application, from the development stage to deployment and throughout ongoing operation, Optimal said.

During the development

stage, Optimal Application Expert helps application developers troubleshoot and predict end-user response-time problems over a network. In the deployment stage, the software enables network managers to predict application response time and determine the WAN bandwidth capacity requirements before live deployment.

This information lets network managers to optimize the net for the application (such as server placement and bandwidth utilization), show the developers how to optimize the application for the network, and set realistic user expectations and service level agreements based on response-time predictions.

In the ongoing operations

stage, Optimal Application Expert helps network managers pinpoint the source of the performance problem, whether it is the network, the server, the client or the application.

Optimal Application Expert is priced from \$5,000 to \$15,000 and is available now.

Read more online, including:

- Overviews of a vendor initiative to develop standards for Web-based management
- A look at the difficulties of managing applications across a distributed network

1415

www.nwfusion.com

WhatsUp, doc?

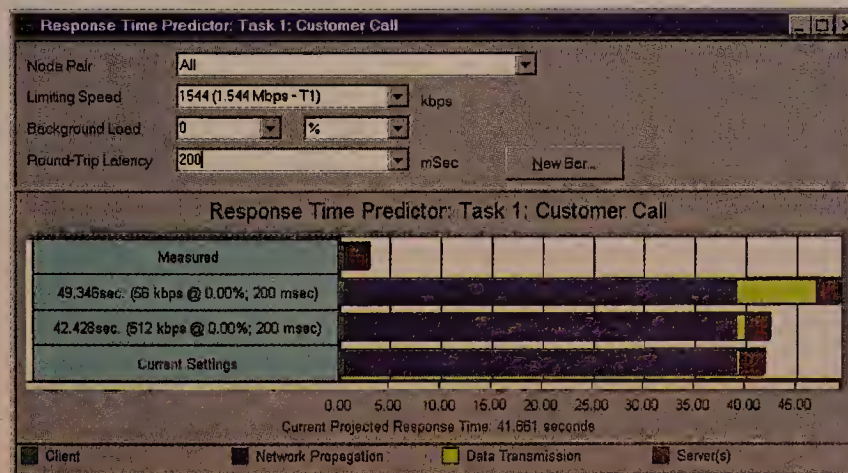
Ipswitch's WhatsUp Gold simultaneously monitors multiple maps of large, hierarchical networks and allows multiple users to access status information via Web browsers.

It scans a user-determined range of IP addresses and creates a database from which a graphical map and other views are constructed.

WhatsUp Gold polls all devices in the view and notifies managers via alarms, alphanumeric pagers or E-mail when a node is knocked offline.

WhatsUp Gold costs \$595 for unlimited network devices. It is available now.

© Optimal: (415) 845-6333; Ipswitch: (617) 676-5700



Optimal's Application Expert measures application response time from development through deployment and ongoing operation.

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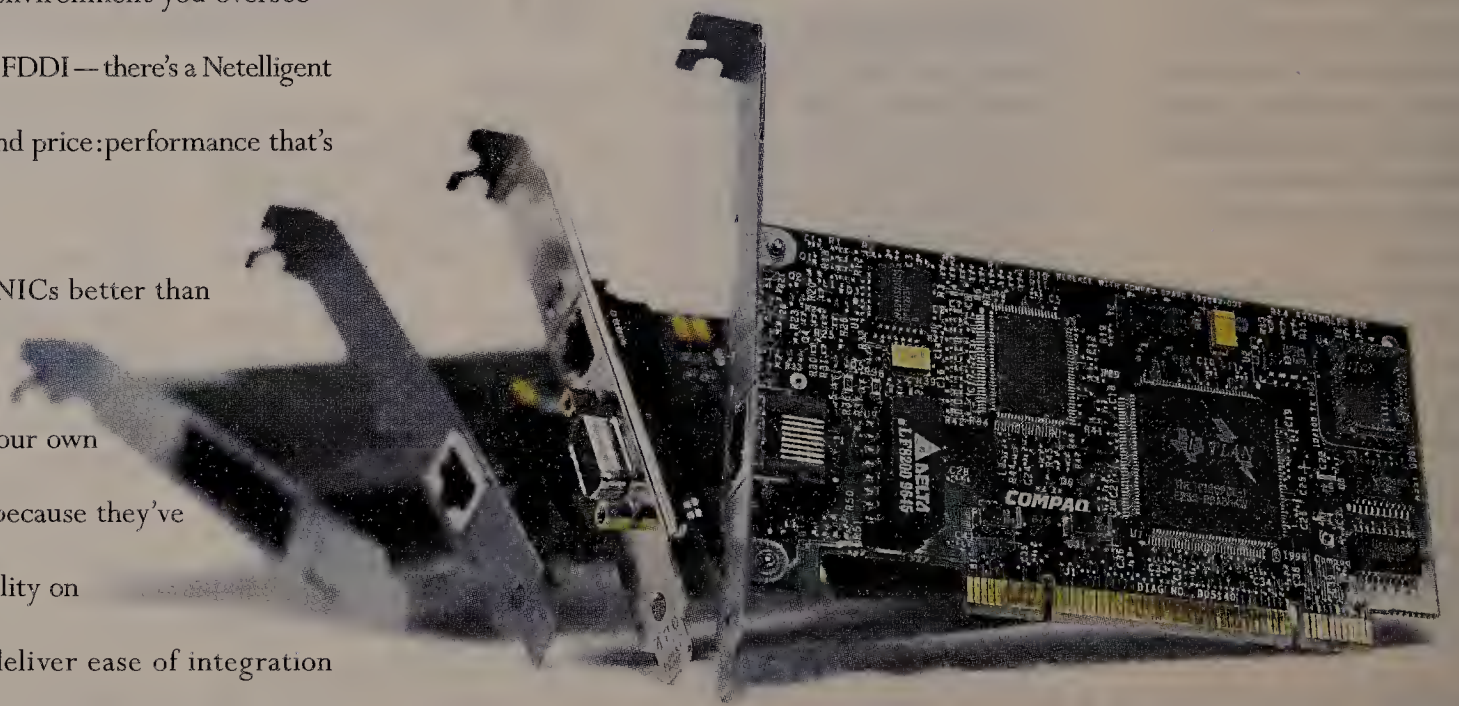
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Briefs

■ **A recent MCI Communications Corp.** TV commercial showing consumers "mooing" as "cash cows" for local telephone companies has drawn a vicious reaction. **Pacific Bell** has even asked California regulators to order MCI to drop the commercial.

The ad claims consumers are being "milked" for \$14 billion in overcharges, without revealing that those are access charges hidden within long-distance tolls.

Pacific Bell said the ad implies the company is doing something illegal, which it is not. A consumer group coalition backed by the local phone industry added that access charges help subsidize local phone lines and universal service. The commercials have run in Washington, D.C. and certain state capitals.

■ **Hacking** is a federal offense. If you do not believe it, ask Nicholas Ryan, the first person to be convicted under the **Computer Fraud and Abuse Act**, which became law on Jan. 8, 1997. Ryan last week pleaded guilty to a felony offense of computer hacking.

In addition to owing America Online, Inc. (AOL) \$62,000 in restitution, Ryan was sentenced to two years probation, six months of home confinement and a fine. In 1995, Ryan illegally accessed AOL's network and violated the online service provider's terms of service.

■ **Bell Atlantic Corp. and NYNEX Corp.** have accepted the restrictions imposed on their proposed merger by the New York Public Service Commission (NYPSC). The NYPSC was the last state regulatory agency whose approval was needed. The deal is still under evaluation by the U.S. Department of Justice and the Federal Communications Commission. The NYPSC demanded better service from NYNEX in New York. The agency also outlined the hiring minimum the company would have to meet to improve service.

Netcom touts new services, bumps off 'Net hogs

Internet service provider promises to bump off 24x7 dial-in users, adds option that guarantees 95% availability.

By Denise Pappalardo
San Jose, Calif.

Netcom On-Line Communications Services, Inc. recently announced a batch of services for business users that eliminates flat-rate fees and guarantees network availability.

Last year, Netcom revealed plans to drop its flat-rate pricing for enhanced dial-in services that include usage limits. In keeping with its statement late last year, Netcom introduced a new pricing structure for its Internet access services and Premium dial-up services for business users.

According to Mike Kallet, senior vice president of products and services at Netcom, NetComplete Advantage and NetComplete Advantage Pro services offer users a better quality of 'Net access. The improved quality, however, requires users to purchase a \$10 option that guarantees a connection 95% of the time.

this year, Netcom will add to its Advantage Pro service 56K bit/sec dial-up access in 11 markets, based on U.S. Robotics' x2 technology.

NetComplete Advantage is slated for availability by the end of this month and costs \$24.95 per month for 100 hours of access. Advantage Pro is expected by the end of the second quarter and is priced at \$29.95 per month for 100 hours of access.

Netcom also is offering its Advantage users Premium services that guarantee network availability. The Premium services guarantee an average network dial-up availability of 95% for an additional fee of \$10.00 per month, Kallet said.

The \$10.00 fee is added to the user's monthly fee of \$24.95 or \$29.95 for Advantage access. If the Internet service provider does not meet its end of the agreement for two consecutive months, the user is refunded the Premium service fee for one month.

Netcom's network availability guarantee is important from the standpoint of network utilization, said Joel Maloff, president of The Maloff Co., a Dexter, Mich.-based consulting firm. The ISP will not sign up everyone who wants the Premium service.

If a point of presence is not equipped to handle more users, Netcom will put additional requests on a waiting list until the POP is upgraded. Netcom is defining its focus on the business community, Maloff said.

Users who currently subscribe to Netcom's \$19.95 basic online service may keep that service but are not eligible for Premium services.

Netcom is also restricting long dial-up times for its basic online customers, Kallet said.



Netcom's Kallet says the company is restricting long dial-up times for its \$19.95 users.

"Netcom will contact those users who consecutively have dial-up times over 100 to 200 minutes each month to offer them a service that is better suited to their needs," he said.

If these users continue to "abuse" their service agreement, they will be knocked off the 'Net, making way for Premium Advantage users, Kallet explained. The policy is called "fair usage."

The ISP, based here, also announced two new services that offer users automatic backup for dedicated connections and security services. DirectConnect is a rerouting service for users who need

the reliability of a backup connection. It automatically reroutes a user's primary access line to an ISDN connection if the primary connection goes down, Kallet said. Network managers can also monitor online usage statistics on the World-Wide Web using DirectConnect client software. The service is available for \$400 per month.

SecureConnect is designed for users that want to add security to their Internet access setup but may not have the expertise. Netcom security experts will work with users to evaluate security needs and deploy the appropriate hardware and software.

SecureConnect is available now and costs between \$400 and \$800 per month.

© Netcom: (800) 638-2661

THIS JUST IN

Comparing the ISP's IPN services

Internet service providers are developing and deploying IP-based services that are often called intranets or extranets. Forrester Research, Inc. in Cambridge, Mass., recently gave these services a new name — Internet Protocol networks (IPN). An IPN is a wide-area IP network service that offers users robust security and the performance necessary to support business applications. Below, Forrester summarizes some of the IPN services available today.

ISP and product	Strengths and weaknesses	Strategy
AT&T, WorldNet Intranet Connect	<ul style="list-style-type: none"> Measuring and monitoring service to large-scale companies Obsessed with owning customer's directory No service guarantees 	Refocus prior NetWare Connect investment
BBN Planet, Internet Advantage	<ul style="list-style-type: none"> Performance guarantee and RSVP trial Not focused on Internet as WAN Major node failure in past three months 	Target hosting and systems integration
Concentric Networks, ConCenterprise	<ul style="list-style-type: none"> Innovative pricing Provides Web access to performance logs Spotty national coverage 	Expand from consumer to business marketplace
IBM, Global Internet Services	<ul style="list-style-type: none"> Global presence Great dial-up port availability No performance guarantees Muddled marketing 	Sell network bundled with other IBM products
MCI, Concert Internet Plus	<ul style="list-style-type: none"> National footprint Building global presence Security strategy incomplete 	Target WAN market
Pilot Network Services, Secure Internet Services	<ul style="list-style-type: none"> Best security offering No performance strategy Limited reach 	Capitalize on security fears
PSINet, PSI IntraNet	<ul style="list-style-type: none"> Early performance and security focus Muddled marketing 	Target all business Internet needs
Sprint, Sprint Intranet Services	<ul style="list-style-type: none"> Lots of experience with remote access Building global presence No performance guarantees 	Target WAN market
UUNET Technologies, Extralink	<ul style="list-style-type: none"> Aggressive performance guarantee Good international footprint Features cover all bases 	Use Internet infrastructure as launching pad into WAN market

WEB HOSTING FOR THE FORTUNE 1000

In addition to Netcom access services, the San Jose, Calif.-based ISP introduced three Web service packages.

Package	Monthly fee
► Business WebHosting: Includes domain name, 10 E-mail addresses, CGI script and 50M bytes of storage.	\$125
► Identity Pack: Includes domain name, one E-mail address, 10M bytes of storage and FTP upload capabilities.	\$70
► SiteConnect: Web hosting customers can use this service to set up a dedicated fractional T-1 to T-3 connection to the server where their Web site is hosted.	\$400

The basic Advantage service offers users 28.8K bit/sec dial-up Internet access, Netcom connection software, two E-mail boxes, a Web page developers' kit, customizable news and finance features, and Internet faxing capabilities.

Advantage Pro offers users the same features as the standard Advantage services but includes additional access choices. Later

WAN MONITOR

Who cares about DSL/HFC in rural America?

We got a lot of calls from the trade and daily press on the recent MCI Communications Corp. announcement that it will team with local telephone and power companies to bring broadband into the Corn Belt.

"What will this do for businesses?" one reporter asked. What businesses? In many areas, there is a five-and-dime and the bank, if that.

Manning, Iowa, where one of the first MCI broadband networks is being installed, has only 1,494 people in town and is about 10 blocks long.

So why should we care if a town in the far reaches of South Dakota gets high-speed Internet access? Because these are the places that are most likely to use the advanced applications promised by the new generation of software, such as videoconferencing, electronic commerce and other next-generation applications.

Frankly, we haven't lived in rural North Dakota, but we can imagine some of what it is like. Chris lives in Claremore, Okla., and Danny now lives on an island off the coast of Maine, so we can at least empathize with being away from a lot of goods and services. And that is exactly why we think this stuff is important.

Look at electronic commerce. People in rural areas cannot afford to hop in their car and drive two, three or four hours to the nearest store when they need something, so they catalog shop or order from a local general merchandise distributor.

Remember the Sears catalog? When it was discontinued three or so years ago, it was still several inches thick, full of just about everything you could buy from Sears and even some stuff that wasn't sold in the stores.

You would think the age of Internet shopping would be attractive to all the former Sears



Daniel Briere and Christine Heckart

catalog shoppers, as would videoconferencing, application sharing, and so on.

How about MCI's call center trials using digital subscriber line (DSL) and hybrid fiber co-axial (HFC) cable in rural America? On the one hand, people could work out of their home using broadband — and their home could be just about anywhere, even in Iowa or on an island off

the coast of Maine. In theory, this would let businesses recruit workers from low cost-of-living corridors, which would keep salary and rent down and bring in new ideas.

On the other hand, businesses could start to market their goods and services into areas that would not be economical otherwise.

Yes, the majority of the population lives on the East and West Coasts. But a whole lot of people live in between — many in rural communities — and they may have even more disposable time and income.

They might even have a greater desire or requirement to transact business electronically instead of physically.

So how does this impact your network strategy? Here are some high-level benefits:

- More homogeneous, national applications. Thinking

about putting live video on your site or installing an electronic commerce application? The constraint of a 28.8K bit/sec modem has plagued most of these, but the high-speed bandwidths offered by DSL offer many more possibilities.

- Access to new markets. In some instances, these are the specific markets for select products and applications. As we said before, online shopping may be best pitched toward those who have fewer options.

- Lower costs. Access to more workers and possibly lower business costs for attracting and supporting those workers.

So only the myopic would assume that a trial of DSL or the HFC option in rural America has no bearing on the strategic business and network plans of business-belt corporations. In fact, it just may open up a whole set of new marketing opportunities.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Local Networks

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Briefs

■ **Intel Corp.** last week unveiled the **EtherExpress PRO/100** server adapter, which supports Cisco Systems, Inc.'s Interswitch Link Protocol (ISL)-based Virtual LANs and includes an i960 processor that off-loads a server's CPU. This improves end-user response times by increasing performance at the server level, the company claimed. The adapter is priced at \$599 and will ship this month.

In addition, Intel announced it will team with Cisco to develop Gigabit Ethernet technology for its future server adapters.

© Intel: (408) 765-8080

■ **Plaintree Systems, Inc.** last week stirred things up at Gignet, the Gigabit networking and systems conference in Washington, D.C. The company claimed that Layer 3 switches will play a minor role in local networking.

Gignet

Unlike most internetworking vendors that are pushing Layer 3 switches with router-like functions, Plaintree rolled out a suite of **Layer 2 Gigabit Ethernet devices** that offer minimal Layer 3 capabilities. The company contends that a flat Layer 2 switched network is less expensive and easier to manage.

© Plaintree: (617) 965-2466

■ **3Com Corp.** last week rolled out token-ring LAN Emulation (LANE) software across its switch product line, which will let customers integrate token-ring gear into an ATM environment. 3Com announced the LANE software for the Super-Stack II Switch 2000, Core-Builder 5000 and 7000 switches, and the ATMLink adapter cards.

Pricing starts at \$995; thenet-work interface cards cost \$545.

All products are available now.

© 3Com: (408) 764-5000

Start-up unveils Gigabit Ethernet switch

Prominet's Cajun switch boasts more than double the backplane capacity of current switches.

By Jodi Cohen
Westborough, Mass.

Start-up Prominet Corp. last week unveiled its first product—a Gigabit Ethernet switch boasting more than double the switch capacity of existing offerings.

Get more info online, including:

- An overview of Gigabit Ethernet technology
- The latest drafts from the IEEE, which is writing Gigabit Ethernet specs
- A short overview of Prominet's Cajun Switch core technology

FIND IT ON WWW.NWFUSION.COM

With a backplane capacity of 41.6G bit/sec, the P550 Cajun Switch is almost three times faster than competitor Rapid City Communications' First 1200 15G bit/sec switch and 10 times faster than Foundry Networks, Inc.'s FastIron 4G bit/sec switch. And the Cajun Switch has more horsepower than Cisco Systems, Inc.'s Catalyst 5000, which offers a 1.2G bit/sec backplane, one

analyst said.

Cisco, however, is planning to roll out the Catalyst 5500 with triple the backplane capacity of the 5000, but the 5500 would still fall short of Prominet's box.

"The thing that really struck me was the overall capacity of the box," said Tom Bain, research analyst at META Group, Inc., a consultancy in Reston, Va. "A lot of companies have the standard 10M/100M bit/sec Ethernet switch with a Gigabit Ethernet uplink, but very few can support more than 10G ports."

Prominet's seven-slot backbone switch can support as many as 24 Gigabit Ethernet ports or up to 120 10M/100M bit/sec Ethernet links. The device, which supports more than 16,000 media access control (MAC) addresses, helps contain broadcast traffic via virtual LANs.

The P550 Cajun Switch supports as many as 1,024 VLANs per switch, which can be configured by port, MAC address or protocol.

Other product highlights

include the ability to set up hunt groups, which combine multiple switch-to-switch links to form a single high-speed connection between switches.

Also, Prominet offers quality-of-service features for handling mixed traffic, such as the IEEE 802.1p priority queuing scheme and partner 3Com Corp.'s PACE class-of-service technology.

HOT FEATURES ON PROMINET'S CAJUN SWITCH

- ▶ Supports 41.6G bit/sec backplane capacity
- ▶ Provides port-, MAC- and protocol-based VLANs
- ▶ Performs priority queuing
- ▶ Allows creation of hunt groups, where multiple switch-to-switch links are combined into a single, logical fat pipe
- ▶ Offers Layer 2 and Layer 3 switching

In addition to the P550 Cajun Switch, Prominet in the first half of 1998 will roll out Layer 3 switch modules that slide into

the chassis, according to Menachem Abraham, the company's CEO.

The device is expected to support IP and IPX routing, and will perform Layer 3 switching at more than 10M packet/sec.

Prominet later this year will also unveil a smaller feeder switch, dubbed P220, designed for 10M/100M bit/sec Ethernet workgroups with Gigabit Ethernet uplinks.

Net managers can configure and manage multiple Prominet switches with the company's Java-based Element Manager application that runs on Windows NT and 95.

P550 Cajun Switch is priced at approximately \$350 per 10M/100M bit/sec Ethernet port and \$2,500 per Gigabit Ethernet port.

The switch will ship in the fourth quarter.

Similar pricing is expected for the company's Layer 3 switches.

© Prominet: (508) 870-5570

Windows NT affiliations

Tandem refocuses lineup around NT

By Christine Burns
Cupertino, Calif.

Tandem Computers, Inc. is moving toward its goal of becoming a force in the Windows NT game by stacking its executive deck with NT veterans and putting a priority on getting NT wares out the door.

Tandem's focus on NT began last May when the company penned an alliance with Microsoft Corp. geared at bringing some of the reliability and availability features of Tandem's traditional data center hardware and software down to the NT market.

Last October, Tandem rolled out its first NT-based servers. The announcement coincided with the appointment of Enrico

Pesatori, a longtime executive at NT-focused Digital Equipment Corp., as Tandem's new president.

Most recently joining the Tandem team of NT-minded leaders is former Compaq Computer Corp. executive Gary Stimac, who two weeks ago became a working member of Tandem's board of directors. Stimac pushed Compaq's server and systems business to capture almost 40% of the market and spearheaded the effort to bundle NT with Compaq boxes.

Stimac's appointment followed Tandem's selection of

Pauline Nist, a 22-year Digital veteran, to oversee development of the Tandem NonStop Himalaya and Windows NT Server systems.

Observers noted that Nist will have to beef up Tandem's lineup of two- and four-way Pentium Pro S Series servers to differentiate them from competing NT machines.



Former Compaq executive Stimac has joined Tandem to bolster NT focus.

Joe Barkan, research director at Gartner Group, Inc. in Stamford, Conn., said Tandem had less than \$1 million in NT servers sales.

"They're not opening up to the whole NT market. They are really only offering a low-end

alternative to existing Himalaya users," Barkan said.

However, Nist said Tandem is on track to release additional products that bring Tandem's

high-availability and high-reliability experience to the NT table. In the coming weeks, Tandem will release a two-node, fault-tolerant system that uses its ServerNet interconnect technology as the physical connection between the nodes and employs Microsoft's NT-based Wolfpack clustering software.

Nist said Tandem will then layer its cluster management software on top of Wolfpack, which will make the clustered hardware easier to handle.

Tandem is also on track for September delivery of its ServerWare software for NT. ServerWare is a collection of middleware products taken from Tandem's high-availability server technology that includes a nonstop SQL Server database, a transaction processing monitor and messaging software.

© Tandem: (408) 285-6031



Novell answers Windows directory call

I know a number of readers are holding off on implementing Windows NT-based networks because of the lack of decent directory services in NT 4.0. Version 5.0 of the Microsoft network operating system (NOS) is supposed to

ship with its new, enterprise-capable Active Directory Service, but the ship date is now rumored to be mid-1998. Allowing time for early implementers to shake out the bugs, which will take a while because this will be Release 1, leaves the possibility that it will be early- to mid-1999 before you can roll out the NT 5.0 installation.

There is a better way, one that will have

you up and running at least one year earlier — possibly even sooner. And the answer won't come from Redmond, Wash.

At its recent BrainShare conference in Salt Lake City, Novell, Inc. demonstrated its soon-to-be-released Novell Directory Services (NDS) for Windows NT.

Not only can you have this proven enterprise directory system for your NT network by late summer — even those who wait for the bug shakeout can have it installed before the first of the year — but you'll get a more robust, more extensive, more scalable, more fault-tolerant, more functional, more universal directory system than the one promised by Microsoft for sometime next year.

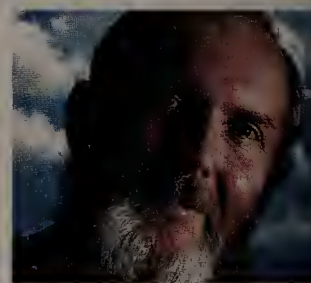
NDS for NT will perform exactly as NDS for IntranetWare but without the need for an IntranetWare server. If you do have an IntranetWare server or a server running Solaris, HP/UX, SCO UnixWare or one of the many ports of the SCO code, you can easily integrate it into your NT-based NDS directory — and not just as an object, but as a fully participating authentication host.

This ultimately means you can configure your master partition on NT with read/write or read-only replicas on any of the other platforms, or vice versa.

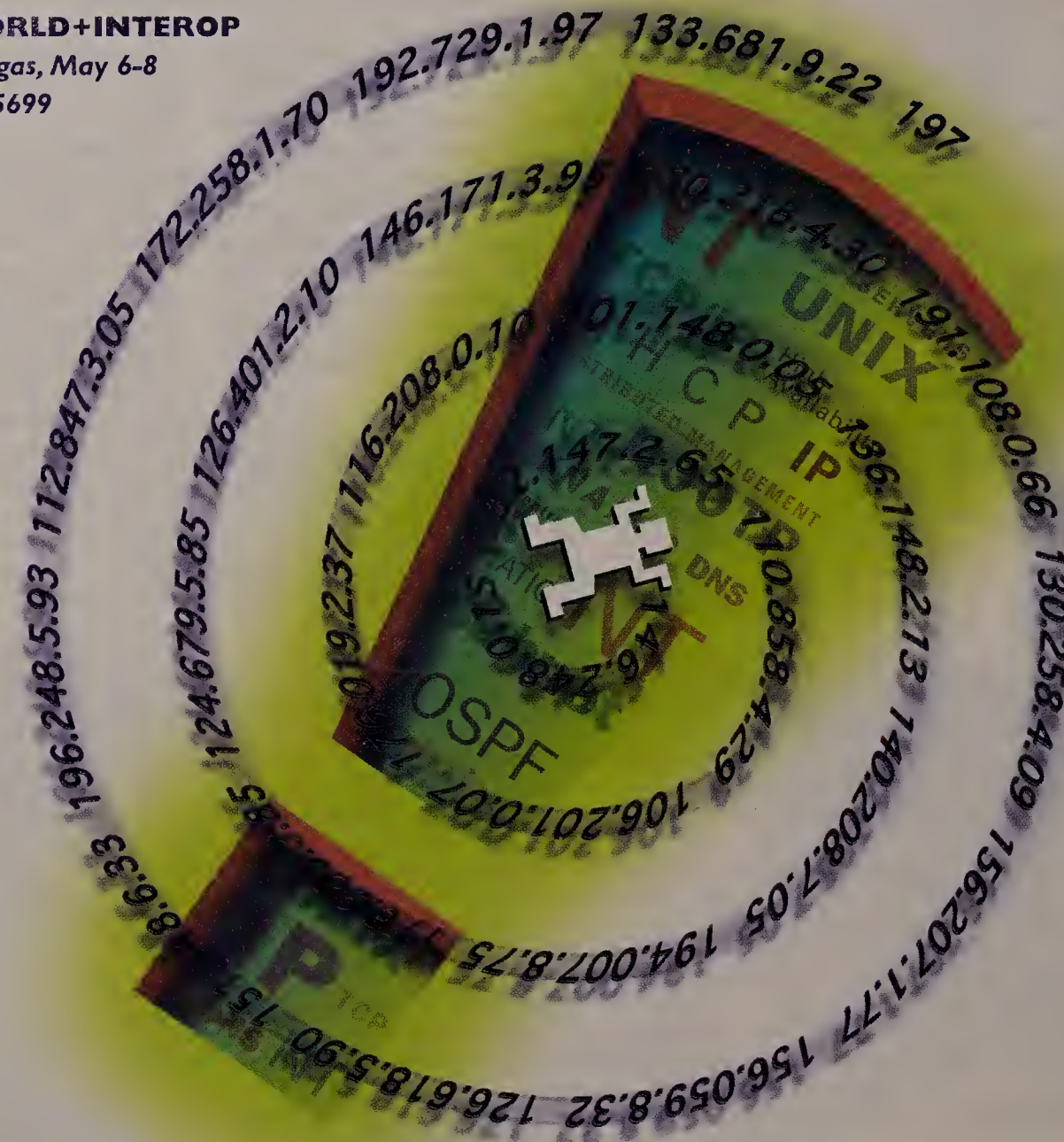
You can also store as few, or as many replicas as you wish on any of your servers. In addition, you'll be able to extend the database schema to accommodate third-party software or simply to more closely tie NDS to your way of doing business.

I've said previously in this column that Novell is far from irrelevant (NW, March 3, page 24), that Microsoft doesn't understand the enterprise and may be overextended trying to fight battles and skirmishes on all fronts (NW, March 10, page 22). And it's all still true. The NT Server NOS has some features that make it desirable for a small department, workgroup or remote site within your corporate network. NDS for NT will make it a full-blown, well-designed solution.

Kearns, a former network administrator, is a freelance writer and consultant based in Austin, Texas. He can be reached at dkearns@msn.com.



Dave Kearns



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EDITORS' CHOICE



HOT PRODUCT AWARD

Tip of the week

If you would like to boot your NT Server clients remotely but are less than pleased with NT's Remote Program Loading implementation, check the new boot ROMs from Canada's Lanworks Technologies, Inc. The company is shipping a Dynamic Host Configuration Protocol (DHCP) boot ROM. DHCP is routable, and the new boot ROM has a zero memory footprint — both big improvements. Read more about it and the initially supported network interface cards and clients at www.lanworks.com/news_dhcp.htm.

Client/Server Applications

Covering: Databases • Messaging • Groupware
Conferencing • Imaging • Multimedia • Development

Briefs

■ **Keyfile Corp.** in Nashua, N.H., this week will announce *Keyfile 3.2*, an upgrade to its **document management and workflow system** that provides full support for Windows NT and OS/2 platforms as well as access to multiple servers from a single PC desktop. In addition, the company has started shipping *Keyflow 1.1* for Microsoft Corp. Exchange, which supports Exchange 5.0 and Microsoft's Outlook.

©Keyfile: (603) 883-3800

■ **Oracle Corp.** in May will start shipping Version 2.4 of *Personal Oracle Lite*, a compact, single-user object relational database. The new release will work with Oracle Mobile Agents software,



which communications over LAN and wireless nets.

Oracle also added new SQL functions and improvements to the backup and restore features of *Oracle Navigator*, a program that lets users drag and drop database objects from Oracle7 servers to Oracle Lite. The database is priced at \$195 per user.

©Oracle: (415) 506-7000

■ **Precise Software Corp.** is set to begin beta-testing *Q/Booster*, which simplifies building distributed applications on IBM's MQSeries message-oriented middleware. *Q/Booster* has a ready-to-use, customizable group of application messaging services, accessible through its own API. Services include *Publish* and *Subscribe*, which lets client applications subscribe to certain messages that are published by specific applications. Shipment is expected in June. The starting price ranges from \$25,000 to \$50,000, depending on configuration.

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Java connectivity push is on

By John Cox
San Mateo, Calif.

Java-based access to corporate data is getting a lot easier as vendors release connectivity software based on JavaSoft's Java Database Connectivity (JDBC) interface.

JDBC products are intended to simplify the work Java programmers must do to access and manipulate databases from server-based Java applications or downloadable Java clients. These connectivity products are essential to Java becoming the primary development language for the Internet/World-Wide Web.

Visigenic Software, Inc. this week will announce *VisiChannel* for JDBC, which is client and server communications software that lets Java applications, including downloadable Java applets, access existing databases. *VisiChannel* works with server-based Open Database Connectivity software to access information in ODBC-compliant databases.

XDB Systems, Inc. in Columbia, Md., last week released *JetExpress* for access to JDBC and ODBC data sources and an optimized link to IBM mainframe DB2 databases. Sybase, Inc. in Emeryville, Calif., recently announced the release of *jConnect* for JDBC, an all-Java application that lets Java code directly access Sybase SQL Server and SQL Anywhere databases.

Although performance does not appear to be an issue for these products, there are differences among them. The products use different protocols for communicating between client and server applications and between the server and databases.

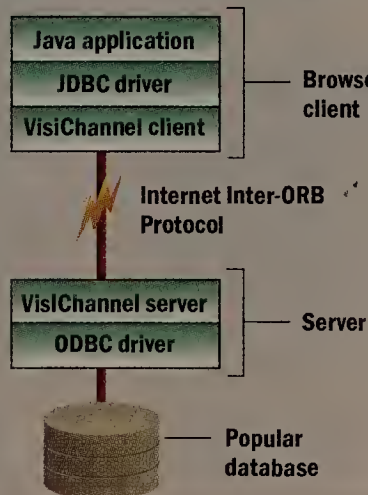
In addition, the JDBC standard developed by JavaSoft specifies four types of JDBC drivers—numbered 1 through 4—that have important differences. Some are written entirely in Java and others only in part. Some

make use of proprietary database protocols, while others rely on standard protocols.

"A general rule of thumb is the higher the number, the better. But, in fact, it's more complicated than that," said Rick Cattell, JavaSoft distinguished engineer and one of the JDBC architects. Type 4 drivers can deliver high performance but may not reach all the needed databases. Type 3 drivers can go

VISICHANNEL LINKS JAVA WITH EXISTING DATABASES

Visigenic's *VisiChannel* sets up a connection between browser-based Java applications and databases linked to corporate servers.



through firewalls to reach databases, and Type 3 drivers may yield lighter client applications.

Type 1 drivers rely on a JDBC-to-ODBC bridge program. Neither Type 1 nor Type 2 drivers work with downloadable Java applets.

VisiChannel for JDBC (see graphic) is written in Java and uses the Internet Inter-ORB Protocol (IIOP) to connect the *VisiChannel* client and server software over the Internet or a corporate intranet. It is a Type 3 JDBC driver because *VisiChannel* translates between JDBC and Microsoft Corp.'s widely used ODBC data access interface, so existing ODBC links to databases can remain in place.

The use of IIOP was critical to Asymetrix Corp., which evaluated numerous JDBC products before selecting *VisiChannel* to be included with its SuperCede Java and C++ development tool set. Most of the other vendors

used proprietary protocols that are not well suited for the Internet, according to Shabbir Dahod, vice president and general manager of internet development tools at Asymetrix.

He noted that both Netscape Communications Corp. and Oracle Corp. have licensed Visigenic's IIOP infrastructure to include in their strategic Web products. "By basing their [JDBC] implementation on IIOP, Visigenic is going to be way ahead of everyone else," Dahod said.

VisiChannel pricing starts at \$2,500 for unlimited use on a one-processor computer.

Sybase's *jConnect*, like *VisiChannel*, is written entirely in Java. As a Type 4 driver, it creates a direct, but native, Sybase link between an application and Sybase databases.

The chief benefit of this pro-

prietary protocol is its high-speed, said David Knight, Sybase director of Internet transaction processing. To access other databases, *jConnect* works with the Sybase *OmniConnect* database gateway, which is sold separately. *jConnect* costs \$495 per server.

XDB's *JetExpress* includes a number of features to support high-performance access by Java programs to mainframe data. To access host DB2 databases, the software exploits IBM's Distributed Relational Database Architecture interface for accessing IBM databases, so new mainframe software is not needed. It has its own TCP/IP link to the mainframe; mainframe-specific protocols, such as Advanced Program-to-Program Communications, are not needed, either.

JetExpress runs in the Windows platforms, OS/2 and NetWare. The high-end Enterprise edition starts at \$26,995.

©Sybase: (510) 922-3500; Visigenic: (415) 286-1900; XDB: (800) 488-4948

Sun hops aboard Lotus' InfoBus

By Paul McNamara
Cambridge, Mass.

The decision by Sun Microsystems, Inc. to embrace Lotus Development Corp.'s InfoBus technology may accelerate the pace at which Web developers are jumping aboard the Java bandwagon.

The InfoBus, unveiled by Lotus at its January customer conference, allows for dynamic data sharing between Java applets or JavaBeans on a Web page or HTML document. According to Lotus, users will get easy-to-assemble Java applications that do more tasks and interact smoothly.

Last week at the JavaOne conference in San Francisco, the two companies announced the technology will be adopted by Sun and incorporated as a set of APIs into an upcoming version of the Java Developers' Kit (JDK).

"[The InfoBus] really automates what would be a lot of tedious code to build a complex application," according to Tom Kane, a Lotus Components product manager. "Now, with relatively simple tools, someone

can build a robust, business-type application without having to get into the nuts and bolts of it all."

For example, Kane said, a stock portfolio Java applet could be quickly and easily connected to a display chart component, allowing the chart to be dynamically updated whenever information in the stock portfolio changes.

Brew up more info on Fusion, including:

- An InfoBus FAQ from Lotus
- A whole hill of JavaBeans links
- A comparison of JavaBeans and ActiveX

www.nwfusion.com

One analyst sees the InfoBus momentum as a positive development.

"It's a fantastic idea and good long-term direction to be able to find a standard way for applets to communicate, especially groupware applets," said Ian Campbell. See InfoBus, page 24

HP netstations run server apps, Java applets

By John Cox

Hewlett-Packard Co. last week unveiled a pair of netstations to round out its desktop computing product line.

The netstations, along with their accompanying software suite, are de-

signed to be less expensive and easier to manage than full-blown, Intel Corp.-based Microsoft Windows PCs.

The netstations will be able to access and run applications on mainframes, Unix and Windows NT servers, including

Java applications.

The netstations are touted as alternatives to the Java-based network computers, most of which first download a slender Java operating system and then applets from a server.

HP is supporting the NetPC, the Microsoft Corp.-Intel initiative. A NetPC is a computer designed without a hard drive or floppy drive, but with additional interfaces and software so both the computer and its applications can be centrally managed.

Later this year, HP will expand the netstation software to incorporate Netscape Communications Corp.'s Navio Navigator Web browser.

The first of two models is the HP Entria II with a 120-MHz Pentium processor. HP estimates the starting price could be as low as \$700. The Entria covers a space smaller than a standard 8.5-by-11-inch page.

HP rates the product's performance at 276,000 Xstones and 4.7 Xmarks, two standard industry benchmarks.



The new Pentium-based netstations from HP will let users access applications — on almost any server.

The second model is the HP Envix II with a 133-MHz processor. Performance is rated at 300,000 Xstones and 5.6 Xmarks. Envix II includes several features to handle large graphics files. By next fall, HP will add support for 100Base-T to the existing 100VG-AnyLAN.

Besides Navio, the netstation software will support JavaScript and Java applications through Netscape's LiveConnect software. Also included will be a set of local client applications, such as window managers, terminal emulators, Common Desktop Environment 2.0 for accessing the CDE standard window manager.

The netstations are due to support Windows NT by fall 1997.

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16. Time-saving tips and pointers to valuable messaging information resources

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InfoBus

Continued from page 23

bell, an analyst at International Data Corp. in Framingham, Mass. "So the fact that Sun is adopting that is a very good sign."

The InfoBus, however, needs a thorough road test, Campbell added.

"When we saw it at Lotusphere, [InfoBus] seemed like a nice internal standard, but I didn't know if it was ready for prime time," he said.

The InfoBus technology will be open to a 30-day review by Sun's Java partners, followed by a 30-day public review. After that, the technology will appear in a subsequent JDK.

Lotus expects to have its sets of Java components, code-named Kona, ready for market this fall.

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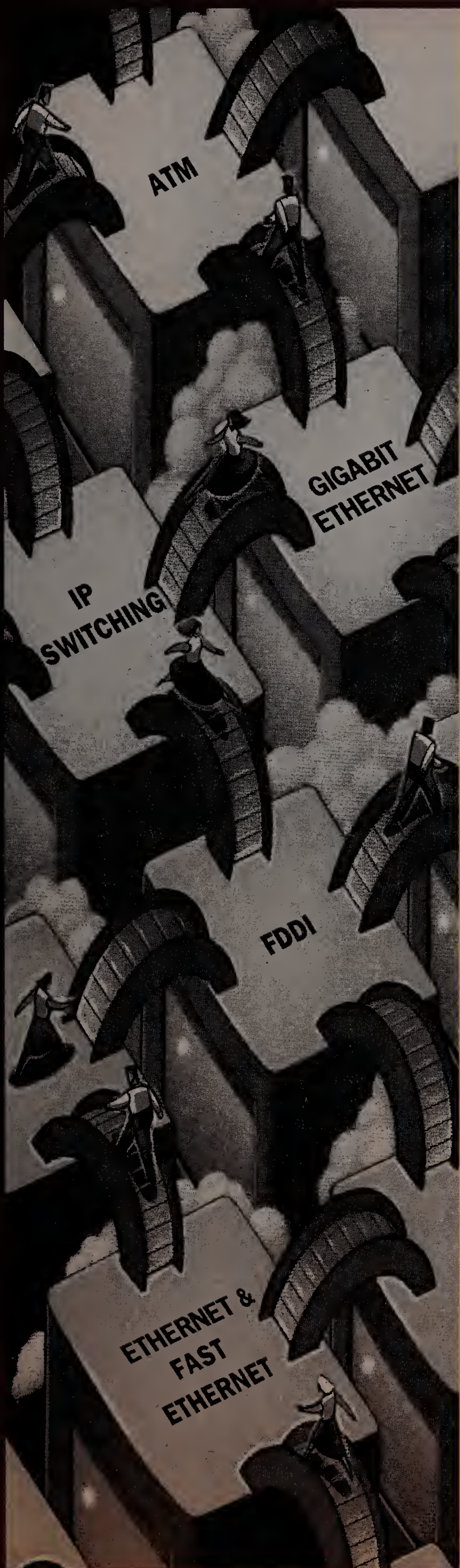
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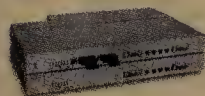
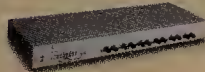
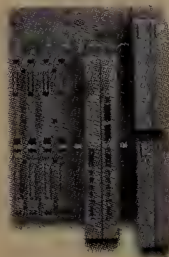


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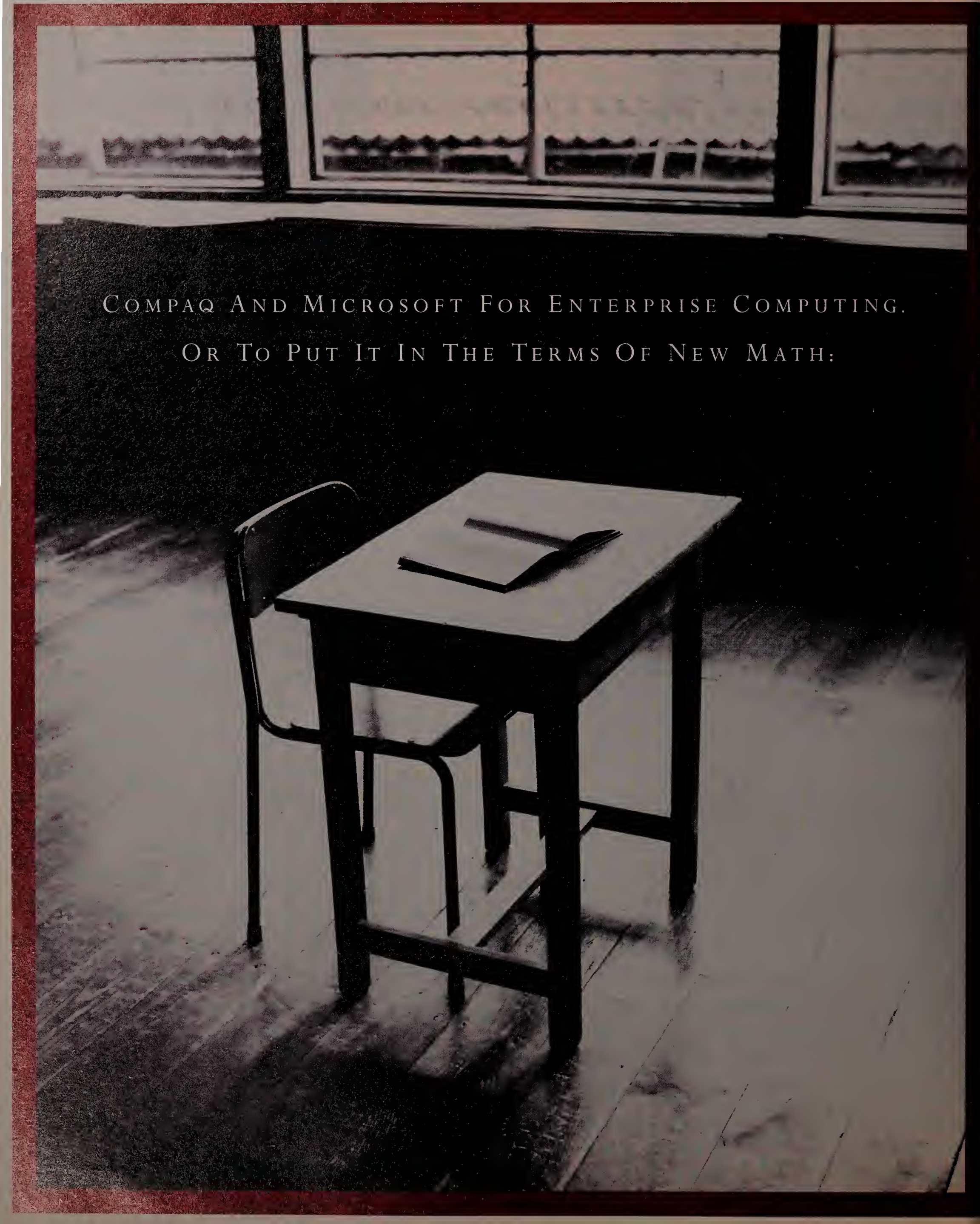
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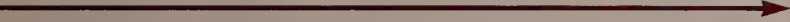
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CircleReaderService #1

A black and white photograph of a minimalist desk and chair in a room with large windows. The desk is a simple wooden table with a chair tucked under it. On the desk, there is a pen and a notepad. The room has a dark wall and a large window with multiple panes, looking out onto a landscape with trees and a fence. The floor is made of wooden planks.

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Web creates new challenge for client/server applications

Developers dissect two-tier systems, rewrite logic and relearn old skills.

By John Cox

Reports from the application development trenches say refitting existing client/server applications for the Internet/World-Wide Web can be far more complicated than expected.

Just how complicated depends on how the application has been built and how it is to be deployed on the Web.

The bottom line is this: Programmers need to learn new application architectures and garner new development skills — in some cases skills relearned from mainframe programming — while creating new development processes.

Today, most client/server applications have been designed with a very simple model — a graphical, PC-based client program that sends SQL commands to one relational database. Sometimes the commands trigger application logic, sometimes called business rules, in the form of stored procedures, which are written and stored in the database.

Because there are only two elements in that model — the client application and the database server — it is known as a two-tier application architecture. And for many applications, it works just fine.

Two is not enough

But the two-tier model is not good on the Web, at least for complex transaction-oriented applications. Through the Web, large numbers of users, generating lots of transactions, threaten to overwhelm a two-tier system.

In addition, the burden of distributing, installing, fixing and managing client code on hundreds or thousands of PCs is a problem users are trying to solve by turning to the Web browser as a common interface.

Interconnecting these client/server applications with the Web or redeploying them on the Web will be difficult, even impossible, experts say. In fact, some of these applications are being scrapped entirely and rewritten

for the Web.

"You have to look at what you've done with client/server applications in the past, and at how good your application infrastructure is and how it is architected," says Todd Wood, global practice director for electronic commerce at Deloitte & Touche Consulting Group.

is, just an alternative front-end.

But if much of the application logic is written into the client, the job is much harder. Wood says some customers are resorting to cumbersome solutions in trying to work around the difficulties. One solution is outfitting a PC with a Web browser and some kind of browser plug-in code.

This code communicates via a remote control software package with a second PC in the data center. The second PC runs the client code, which communicates with the database server. Through remote control software, the user at the first PC sees and controls the screens that are being created on the second PC.

Corporate developers have three options in blending client/server with the Web, says Shai Talmi, director of research and development at The A Consulting Team, Inc., a New York-based firm.

One option is simply to scrap the existing application and rewrite it with Internet technologies such as Java, HTML, HTTP and Web server interfaces. For some client/server applications this may be the only alternative.

A second approach, one widely used, is the "data publishing" model, which takes existing client/server data and converts it into HTML format on a Web server or creates an interface to the database. Typically, Talmi says, these are read-only applications.

There are two problems with this approach, says Mitch Kramer, contributing editor with Patricia Seybold Group, Inc., a Boston-based technology research firm.

One problem is the browser interface has fewer of the fea-

tures found in typical PC-based client applications.

Secondly, access to back-end databases is obtained via an HTTP connection to the Web server and then through an external interface such as the Common Gateway Interface (CGI) or one of the proprietary but widely used server APIs from Microsoft Corp. or Netscape Communications Corp. HTTP and CGI are not designed for high-performance, high-volume applications, according to many developers.

The final alternative to blending Web and client/server applications is to salvage as much of the existing application as possible. This is done by moving some application logic to the client browser, in the form of Java applets or ActiveX Controls. Users can also move more of the logic into a middle-tier application server, often in conjunction with some kind of transaction processing service.

Smart browsers

Patricia Seybold's Kramer points out that this approach means the browser client becomes larger and more complex because application code is being downloaded to the browser client in the form of ActiveX or Java components. These same components also give the browser more intelligence and power. "You're making it a real client, not just a dumb terminal," he says.

Kramer notes that many database and tool vendors are supporting this approach by beefing up the CGI interface or creating an alternative to it, sometimes bypassing the Web server entirely.

In this salvage approach, developers may be unpleasantly surprised at how much rewriting may be needed, Talmi warns.

"If your [client/server] application has a graphically rich user interface, a lot of that will have to be rewritten," Talmi says.

"But the back-end processing and heavy data access [code],

such as scanning database tables and aggregating data, can be easily moved to the server," he added.

"Easily" may be a relative term. According to Talmi, developers often will have to manually inspect the client/server code, studying what the application does and how it does it. "And you'll have to move a lot of code around," Talmi warned.

For example, in a typical client/server application, when a user pushes an on-screen button, some code attached to the button is executed.

But in an Internet/Web application, the user has to fill in all the on-screen fields, push all the buttons, and then submit the screen to the Web server. The Web server, via an interface, passes those filled-in fields to a server, where the application code is executed.

This is the same model used in mainframe programming for CICS applications, according to Talmi.

"When you want to salvage your client/server code, you want it to execute on the middle-tier application server," Talmi says.

"That's different from the way you wrote it when you did classic client/server programming," he added.



But customers are so frustrated with the costs and trouble of deploying client/server that they're willing to relearn, he says.

"I think that for homegrown applications, the Web model will be a tremendous money saver for many companies," Talmi says. ■

MIGRATING TO THE WEB? HERE'S WHAT TO WATCH OUT FOR:

- If the bulk of your client/server application logic is running on the client, expect problems shifting this to a combination of Web and server-based programs. In effect, you're building a three-level application infrastructure.
- Inconsistent data. Back-end applications may record data differently, so making data consistent can be time-consuming.
- Transactions. Can your existing applications accept transactions submitted from a Web client? Can existing applications return data that's consistent and accurate?
- Choosing a vital customer service application as your first Web experiment is risky, especially if your application infrastructure is weak.
- Servers may have to be replaced with more powerful computers. Network capacity may have to be increased.
- Application design becomes more important to minimize round-trips over the Internet, especially with large files.
- Client/server developers will need retraining to deal with a multilevel application architecture.
- Web-enabled applications bring together creative designers and professional programmers. You need new procedures and skills to help them work together.

Wood's staff often works with customers that are installing a business application suite from packaged software vendors such as SAP America, Inc. or The Baan Co. These applications have a three-tier architecture, with the data on a back-end server, the application logic and database access code on a middle-tier server, and the client application.

"Then it's very easy to call the application logic from the front-end [client]," Wood says. "That's really what the Internet

Intranets & the 'Net

Covering: Internet Technologies and Services
for Collaboration and Electronic Commerce

Briefs

■ **Corel Corp.** last week released the official public beta of its new Office for Java, the first suite of productivity applications written for the Java platform. The product includes Corel's WordPerfect, QuattroPro spreadsheet application and a personal information manager. Office for Java last week received 100% Pure Java certification from JavaSoft, a division of Sun Microsystems, Inc. The certification signifies that the product will run on any platform.

Also last week, Sun announced Corel is licensing its Java Studio tool to be included in the Office for Java suite. Office for Java can be downloaded from Corel's Web site at www.corel.com.

© Corel: (613) 728-3733

■ **Quantum Leap Communications, Inc.** has released a Java-based Web publishing tool, Quantum Objects. It stores video and art elements, such as logos and photographs, in a database of object-oriented categories so a Web page can be easily changed.

© Quantum Leap Communications: (312) 494-0300

■ **Snickelways Interactive, Inc.** later this spring will ship SalesCast Version 1.0, a client/server application for Macintosh, Unix or Windows platforms that assists sales resellers by using Snickelways' push technology.

SalesCast automatically transmits to resellers a variety of information for which they have already identified preprogrammed preferences, such as inventory or discounted items listed in a supplier's server.

© Snickelways Interactive: (212) 366-6000

■ **Odyssey Research Associates, Inc.** has started shipping a hardware/software-based Web server, called the Recluse High-Assurance Web Server, that allows access to users via hardware-based smart cards.

© Odyssey Research Associates: (607) 277-2020

Netscape eyes visual tool mart

By Carol Sliwa

Mountain View, Calif.

Netscape Communications Corp. wants developers to write cross-platform applications that run against its client and server offerings, but until last week, had no visual-oriented tools of its own for that market.

With this week's public release of a preview version of Netscape Virtual JavaScript, a new programming tool, developers will be able to start building platform-independent applications — without writing code. Instead of keying in commands, developers can drag and drop prebuilt software components, written in Java, JavaScript or HTML, right onto Web pages, the company said.

In a white paper released last month, Netscape coined the term "Crossware" to refer to standards-based applications that run across networks, operating systems and platforms. Crossware applications can leverage server-side services, such as messaging, collaboration

and enterprisewide services exposed via the Common Object Request Broker Architecture. Visual JavaScript, formerly code-named "Palomar," is the tool that Netscape hopes will help

architectures, or they're either very client-centric or very server-centric," said Rick Fleischman, Netscape's group product manager for tools. "They don't really span that bridge and do both," he added.

Key product elements are:

- Component Palette, which contains prebuilt HTML form elements (such as fields and buttons), as well as JavaScript components and JavaBeans from Netscape, its partners and independent component developers.

- HTML Page Builder, which allows developers to view all components that have been dragged onto a page in WYSIWYG or source code fashion.

- Inspector, which lets developers see a component's properties and events.

- Connection Builder, which describes whether a connection will be event-based or property-based.

- JavaScript debugger for checking applications.

- Project Manager, which contains all pages, Java-class files



The Visual JavaScript programming tool lets developers build applications by dragging and dropping prebuilt software components from the Component Palette onto a Web page.

create these Crossware applications.

"Clearly, Netscape's platform is important, and to drive its adoption they need tools to target that platform," said Evan Quinn, research director for Java and Internet software at International Data Corp. in Framingham, Mass.

Existing tools on the market "are either tied to proprietary

Sybase honcho makes EC play

By Ellen Messmer

Have you heard of Mark Hoffman? If you are from the database field, you will probably recognize the name of the current Sybase, Inc. chairman. Now Hoffman also wants electronic commerce aficionados to know his name.

Hoffman has taken over start-up Commerce One, Inc., which today announced a specialized server designed to facilitate business-to-business purchasing from electronic catalogs.

Called the C1 BuySite Proxy Catalog Server, the NT-based software offers a single purchasing interface for multiple supplier catalogs (such as Com-

merce Wave's own SupplySite catalog), that a corporation can use to purchase items electronically.

Stored at the purchaser's site, the BuySite server has a database to hold electronic catalogs that can be updated by the suppliers periodically over the Internet or through direct dial-up. Purchasers can browse through the catalogs and place orders.

The BuySite server, now in beta and set to

ship in the second quarter, works with Commerce One's NT-based C1 REOS 5 transaction server that can total up catalog items and shipment costs, issue invoices or check inventory



Commerce One's Hoffman says, "I think electronic commerce can be bigger than Sybase."

availability.

"The buying organization registers the suppliers in the transaction server," said Hoffman, who is president and CEO at Commerce One. The supplier then authenticates its identity against the transaction server by means of Commerce One's Windows-based transaction-manager client software for encrypting account number, user name and password.

Due to long-standing export rules, the current version of the transaction manager only uses weak 40-bit encryption approved by the U.S. government, but Commerce One plans to have stronger public-key encryption implemented by this fall.

The C1 BuySite Proxy Catalog Server costs \$35,000. The C1 REOS 5 transaction server costs \$25,000.

© Commerce One: (510) 941-6000

and images of the Web application being developed.

A Component Developers' Kit also is included for developers who want to build new components to add to the Component Palette.

Most of the components in the preview release come from Netscape, but the company expects that by the time the final product ships in the fourth quarter, the bulk of the components will come from third parties, Fleischman said.

"We're going to have an extended beta period to really allow us time to get a lot of feedback from customers, although we expect the tool to be very usable in the beta period," Fleischman said, noting that the preview release does not contain the tool's complete functionality set.

Because the Visual JavaScript programming tool is written entirely in Java, it eventually will run on a variety of operating systems, such as Windows, Macintosh and major Unix platforms. But the preview release currently is available only on Windows 95 and NT.

The preview version can be downloaded from Netscape's Web site. Plans call for the final product, due by year-end, to sell for \$495.

In related news, Netscape announced that an Enterprise

Download an evaluation copy of Netscape's new tool, and see what other vendors are offering in the way of cross-platform development tool kits.

www.nwfusion.com

Server 3.0 Pro edition is due out for Windows NT and Unix in the second quarter. The Pro edition features the standard functionality of the company's Web server plus a relational database. Customers can choose either Informix-Online Workgroup Server database software with a development and limited deployment license, or an Oracle7 Workgroup Database server with a development license.

The Pro server will cost \$1,995.

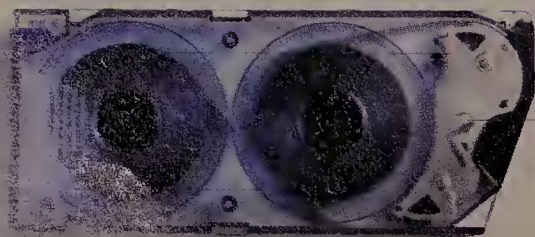
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Permission to whisper in the field, sir?

"There was no way of knowing whether you were being watched at any given moment. How often, or on what system, the Thought Police plugged in on any individual wire was guess-

work. It was even conceivable that they watched everybody all the time. But at any rate they could plug in your wire whenever they wanted to."

—George Orwell, 1984

It seems that the Clinton administration is shopping around a draft of a proposed Electronic Data Security Act of 1997 to various members of Congress (see

www.cdt.org/crypto/). Under the guise of establishing an infrastructure for electronic commerce, this bill would significantly reduce the protection an individual has against capricious government eavesdropping.

There are a lot of good words and even some good ideas in this draft. It proposes a framework for the registration of private certification authorities (CA). Such CAs are a prerequisite for many types of secure communication and electronic commerce over the Internet. The draft also proposes a framework for the registration of private key recovery agents, potentially very useful in the recovery of lost keys in a business context. The draft proposes to establish specifically that the use of encryption by individuals in the U.S. is legal, without regard to the type or strength of encryption. It also says that the use of encryption technologies amenable to key recovery would be voluntary.

However, the draft also states that a user may not use a registered CA unless that user also agrees to support the key recovery. The use of such a CA is important if you want others to be able to exchange secure communication with you without having to contact you first. It would be one thing if the government was



Scott Bradner

required to get a court order to obtain a copy of your secret keys from the key recovery agent (as most interpretations of the U.S. Constitution would seem to require) but this draft also permits unidentified people from "a law enforcement or national security government agency" to retrieve keys without a court order.

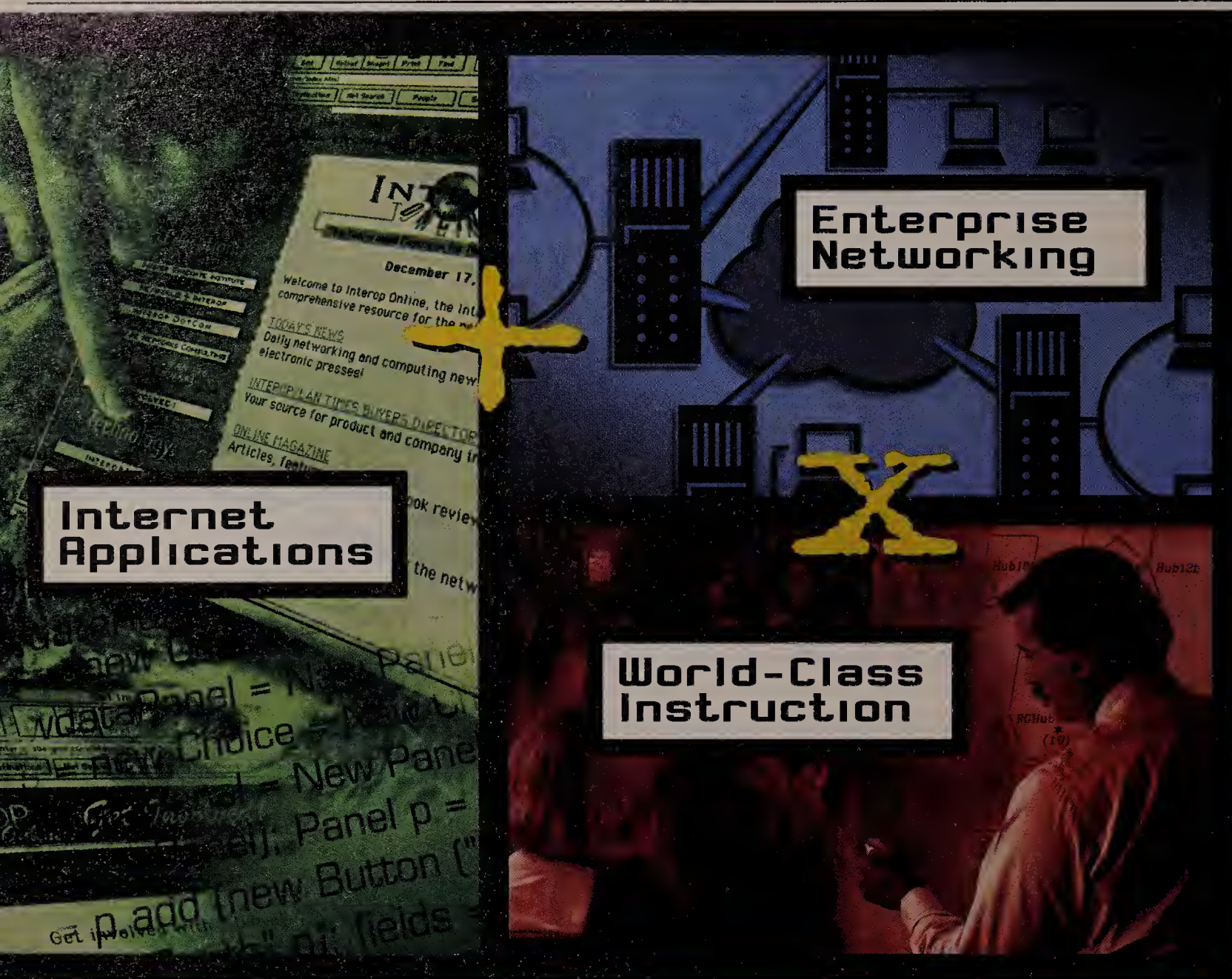
Trying to catch up to Orwell's future (which was set in London), and not to be outdone by the U.S. administration, the British government has put forth its own version of "to be exposed is to be safe" at <http://dtiinfo1.dti.gov.uk/pubs/>.

In days of old, if a peasant wanted to converse with a friend out of earshot of the king, they could take a walk in a field. Until now, the U.S. government has not required its citizens to speak only within the earshot of the government; we are still permitted that walk in the field. This bill is starting to withdraw this permission, not just after due deliberation by an independent judiciary, but at the unchecked whim of unspecified people.

In efforts such as this, we are asked to give up little liberties for greater good. Like a frog in a slowly heating pot of water, we do not recognize the cumulative effect of the little changes until it is too late.

Disclaimer: Relative to the place down the street, Harvard's heat is applied with subtle panache, but the above are my lamentations.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached via the Internet at sob@harvard.edu.



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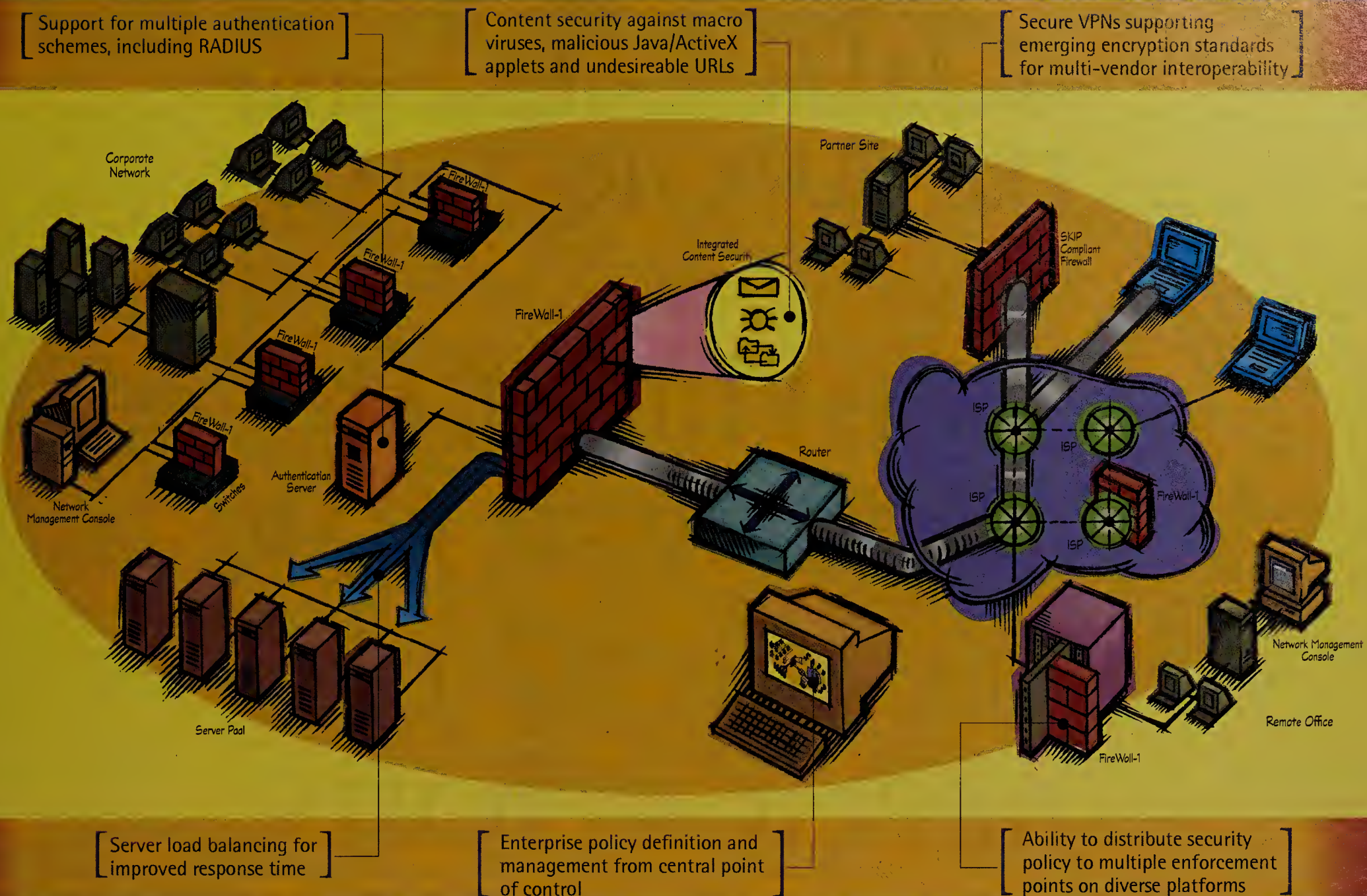
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4	Trusted_Sites	Network-NY	http-Strip_JAVA, ActiveX	accept	Short	Gateways
5	Network-NY	NY-Router	Any	drop	StripTrap	NY-Router
6	Any	Any	Any	drop	Alert	Gateways

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I am looking for a supplier of the software package, LANSight. I am told it will allow me to monitor workstation users on our LAN without user detection. We provide operator services and need to see and hear the operator for evaluation and quality assurance. Your help is greatly appreciated.

Via the Internet

Intel Corp. makes LANSight, which works on a DOS computer via a TSR program, and in Windows through a collection of Dynamic Link Libraries. LANSight is available as a stand-alone product, as well as bundled in the management product, LANDesk. In addition, you can find LANSight as part of Novell, Inc.'s ManageWise product.

The ManageWise solution provides functionality beyond what you'd get with the Intel product alone. With ManageWise, for instance, the LAN administrator could react to a problem before the user even calls the help desk.

ManageWise can display a map showing all workstations that are or have been logged on to the network. When a problem is sensed at a workstation or server, a colored bell is displayed, indicating the severity of the problem.

Compaq Computer Corp., an OEM, takes advantage of this functionality by adding workstation agents that detect conditions, such as heavy processor load, and report them to a central management console. The administrator can set the level at which user response is necessary before remote control can be granted to the workstation.

I have not been able to find a single product that would allow you to listen to a conversation and watch screen activity. Perhaps your telecommunications group knows of or can come up with a switching device that will allow for a simultaneous capture of a given support call when a particular computer is selected for monitoring.

Reliable IP multicast applications call for special protocol development

By Stephen Collins

By building IP multicast support into their latest products, leading router and high-end switch vendors have laid the groundwork for a new generation of multicast-enabled applications.

IP multicast is ideal for one-to-many and many-to-many information distribution because traffic originating from a single source will be replicated as it flows across the network, with each destination receiving its own copy of the traffic stream. Information can be delivered simultaneously to many receivers using network and server resources just as efficiently as delivering information to a single receiver.

Multicasting's many flavors

Most people readily associate multicast with real-time streaming media applications such as desktop video, videoconferencing and Internet audio. These are challenging applications that require the network to support a specific quality of service. This ensures fixed delay and guaranteed bandwidth for the real-time stream. However, these applications do not require 100% end-to-end reliability because it is acceptable to lose a few packets in an audio or video stream without sacrificing quality.

Less well known than streaming media are multicasting applications that require 100% end-to-end reliability. These are applications such as real-time collaborative computing, real-time datastreaming and bulk information distribution. New reliable multicast protocols are being developed to support the needs of these applications, which are not supported by existing TCP/IP transport and service protocols. During the next 12 to 24 months, we will see the definition and standardization of reliable multicasting protocols to meet the needs of each distinct class of application.

Many popular unicast, or one-to-one applications, such as File Transfer Protocol (FTP), telnet and Web browsing, run over TCP. This protocol provides reliable, ordered delivery over a point-to-point IP connection. But using TCP transport for one-to-many distribution applications is inefficient because each receiver requires a separate TCP connection to the source, resulting in redundant use of network and server resources.

Task Force (IETF) requested that an Internet Research Task Force help guide the development of Internet standards for reliable multicast.

The advantage of this multi-protocol approach is more streamlined and efficient protocols for each class of application, rather than a less efficient generalized protocol for all. A range of specialized multicast protocols would respect each multicast application's specific require-

ments, which depend on topology and scale, the type of information being distributed and whether real-time delivery is required.




Multicast file distribution is yet another class of reliable multicast applications. It is a one-to-many application and may involve many thousands of receivers. Unlike collaborative computing and real-time data feeds, file transfer isn't a real-time application.

Removing that deadline pressure enables a more efficient approach for retransmitting lost packets. Instead of continuously sending retransmission requests to the sender as with real-time applications, file transfer receivers can withhold their retransmission requests until prompted by the sender. This can help

MULTICAST TRANSPORT PROTOCOLS

Varied requirements of different multicast applications call for development of several multicast transport protocols.

Requirements

Application class	One-to-many communications	Many-to-many communications	Reliable delivery	Ordered delivery	Protocol
 Real-time data distribution	Yes	No	Depends on specific application	Depends on specific application	Nothing formally proposed
 Real-time collaborative computing	No	Yes	Yes	Yes	Scalable Reliable Multicast (an Mbone protocol)
 Multicast file distribution	Yes	No	Yes	Not applicable	IETF Internet draft submitted by Cisco and StarBurst

Instead, IP multicast applications run over the User Datagram Protocol (UDP), which simply provides for the best-effort delivery of a packet to a specified port with the option of detecting errors in the packet. In other words, UDP does not guarantee 100% delivery of every packet that is required of applications such as software distribution. Given the minimum level of service provided by UDP, any of the specialized transport functions, including reliability, of each multicast application must be provided by the layer above UDP.

A generalized multicast TCP for providing reliable, ordered, one-to-many delivery would resolve these issues. Although it would be possible to design a single protocol for all reliable multicast applications, it is more likely that several different protocols will be developed for the emerging classes of reliable multicast applications. Late last year, in fact, the Internet Engineering

Task Force (IETF) requested that an Internet Research Task Force help guide the development of Internet standards for reliable multicast.

Reliable multicast applications

Take, for example, collaborative computing. This multicast application is a many-to-many information exchange for which the number of participants in even a large session would probably not exceed 50. Collaborative computing applications require reliable delivery of data, such as cursor movements for shared whiteboarding or joystick signals for interactive gaming. Since these are real-time applications, the data must be delivered reliably within a certain time limit.

Another class of reliable multicast applications, real-time data distribution for stock quotes and newsfeeds, has different requirements. Real-time data distribution feeds sequences of discrete messages to thousands of receivers. Real-time data feeds may

reduce the many-to-one implosion of retransmission requests at the sender.

StarBurst Communications Corp. has developed a reliable multicast FTP (MFTP) that uses such a scheme. In collaboration with Cisco Systems, Inc., StarBurst in January submitted the specification as an Internet draft to the IETF. The company expects the IETF to consider its MFTP as a baseline for a standard reliable MFTP.

Given the significant bandwidth savings IP multicast offers, it is important that network managers understand this relatively new technology and keep abreast of the development of new protocols for reliable IP multicast.

Collins is vice president of marketing and business development at StarBurst Communications, a multicast product developer in Concord, Mass. He can be reached by phone at (508) 287-5560 or via the Internet at scollins@starburst.com.



Handing off your net management burden

Under the rubric of "Companies to Watch" I usually write about vendors with unusual products. But International Network Services (INS) bears watching not only because of its innovative services, but because the company might be a great place to work. (Hey, we look out for our friends.)

Sunnyvale, Calif.-based INS (www.ins.com) has grown rapidly in five years by offering professional services and remote management capabilities to companies struggling with the increasingly tough job of managing multivendor networks. INS has close to 700 employees. It operates in some 25 U.S. locations and is expanding abroad.

INS CEO and founder Don McKinney told me he prefers the term outtasking, rather than outsourcing, for INS' services because the company wants to work with — not replace — your existing staff. INS is targeting customers who don't want or don't have the budgets to bring in a big outsourcer like EDS.

INS' Network Wizards help companies with everything from backbone upgrades to the design of network operations centers. These staffers can tap into an online knowledge-sharing system that helps them work smarter and faster.

But INS' most interesting offering is the EnterprisePRO remote management service. For a monthly fee, INS monitors your hubs, rout-

ers, remote access gear and other devices and gives you reports that help you figure out what's not working, what the future holds and how to budget for the changes ahead.

Handing management over to a company like INS can make a lot of sense because management is a no-win proposition: Do it right and no one notices (that's your job, right?); screw up and they're all over you. INS has the expertise and staff to stay on the cutting edge, and you're probably better off keeping your staff focused on network applications that can make a difference for your business.

The company showed me cost comparisons that indicate EnterprisePRO can save you a lot of money compared with running one of the big management platforms. I take those figures with a grain of salt, but if you realized only half the savings you'd be doing well for yourself.

But beyond its services, check out the many job opportunities at INS. The company pays well and every employee gets stock options. Perhaps more important, working at INS could diversify your experience by getting you involved in a range of projects.

So you just may want to work with INS — as a customer or an employee. (If the latter, just don't tell your boss I gave you this tip.)

John Gallant, editor in chief

jgallant@nww.com

COMPANIES to WATCH

Java Break • Ted M. Young

Casting a vote for HotJava browser — maybe

Back in the fall of 1995, when Java was starting to generate some real buzz, people were confused regarding the difference between HotJava, the browser, and Java, the language. These days, it seems nobody gets confused — mostly because HotJava has faded from people's minds. But that's starting to change.

Initially, HotJava was just a proof of concept, showing how easy it is to write network-enabled applications in Java. (And what better network application to write than a Web browser?) While HotJava certainly demonstrated Java's network power and was the first browser that could be used for testing applets in the early Java Developers' Kit (JDK) alpha and beta days, HotJava clearly wasn't going to replace Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Internet Explorer.

Because I work for a company that is totally dedicated to Java, I recently started playing with the beta version of JavaSoft's HotJava 1.0 browser. JavaSoft apparently decided that the browser market could use another player, and I, for one, applaud the effort.

With last month's release of HotJava Views, a set of desktop applets based on HotJava, it appears HotJava will be a viable browser contender.

HotJava is not only buzzword-compliant, supporting SOCKS (a secure proxy layer), HTML 3.2, Java Archives, Secure Sockets Layer and more, it is also the best browser for running Java applets. In fact, it's the only browser even close to shipping in final form that fully supports the Java Applet API 1.1. HotJava also includes the ability to support digitally signed applets so they can access resources on your computer.

What else makes HotJava special? Without any programming, you can completely customize the interface: the icons on the toolbar, the menu items, error messages and more. You can also modify how it reacts to different HTML elements and, with some Java programming, define new content and protocol handlers.

Content and protocol handlers can be thought of as plug-ins, but they're written in Java. Content handlers allow you to support new Multi-purpose Internet Mail Extension types, such as image/png. Protocol handlers let you support new protocols — for example, an HTTP2E: protocol, which would translate the text on an HTML page from any language into English. With handlers, the HotJava browser

can be customized to access any data or content transparently, or to manipulate content that already exists (for example, making it easier for the visually impaired to surf, suppressing links to unwanted URLs, and so on).

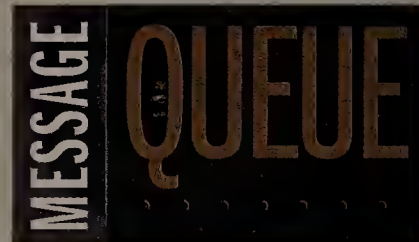
Alas, HotJava is not perfect. Like many compute-intensive Java applications, HotJava is slow. Granted, I'm testing a beta version and I'm not running it on a compiler, but on my system (a reasonably equipped Pentium 90 running Windows NT 4.0) HotJava trails Internet Explorer and Netscape Navigator by far. Of course, one of HotJava's biggest advantages is that it will be available on any platform that can run JDK 1.1 applications, including the oft-talked-about network computer (NC).

Nevertheless, HotJava's future is certainly bright, and I will use it to at least test my Java Applet API 1.1 applets. Will HotJava replace Internet Explorer on my desktop? That will depend on how fast the true, nonbeta release of HotJava is, and what protocol and content handlers become available from third parties.

Should you use it? It certainly is a great environment for executing applets and has excellent customization flexibility. However, I think it is better used as a secondary browser for most systems, although it could become a primary browser for NC platforms.

(I will be covering the JavaOne developers' conference in my next column. Please contact me at the E-mail address below and let me know what you'd like to hear about.)

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Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

SAG takes issue with test

Your Server Test Series (Feb. 24, page 46) included an evaluation of SAG Electronics' STF Quad RAID 5. While we were pleased to see that our product was the price/performance leader in the article, we would like to clarify the status of the product during the time it was tested and our philosophy behind all of our products.

The review mentioned that the SAG Quad RAID 5 had, at that time, been shipping for a month. This is true with respect to the server you actually tested. However, it is not true regarding the initial configuration we provided you, which was the



Policies: Coming to a net near you

If 1996 was the year of IP switching, expect 1997 to be the year of policy-based networking. With its recent TranscendWare announcement, 3Com Corp. has put the spotlight on the need for centralized control of the array of features enabled by the emerging intelligent network, such as bandwidth control, traffic prioritization and security. Likewise, Cisco Systems, Inc. is poised to unveil its plans for policy-based management.

TranscendWare consists of management and control software that runs on 3Com network adapters and gear such as switches and routers. Under TranscendWare's policy-based management, network and business managers can cooperate to define policies, such as how much bandwidth the users in the accounting department get at the end of the month. These policies come into play only when traffic on the network is high.

In contrast, NetManage, Inc. has developed what it calls Policy Management Architecture (PMA). Like TranscendWare, it allows for centralized control of communications priorities and access controls, and requires that some software run on the desktop.

For example, one PMA module, called the GateKeeper, allows you to control bandwidth usage, such as creating a policy whereby PointCast traffic is restricted to 5% of network bandwidth. Unlike 3Com's policy-based scheme, NetManage's PMA operates all the time and is independent of the network adapter and protocols used.

In 3Com's and NetManage's case, the software on the user's desktop or a server is responsible for identifying the type of traffic it sees and telling the network how to handle that traffic.

Specifically, 3Com is using its Priority Access Control Enabled (PACE) switching technology, as well as the tagging scheme defined by the IEEE in 802.1q.

Under PMA, NetManage supports the weighted fair queuing feature in Cisco routers, which assigns different priority levels to different traffic types.

Compared to Cabletron Systems, Inc., 3Com and NetManage are relative newcomers in the policy-based networking space. For several years, Cabletron has offered basic policy management as part of its SecureFast Virtual Networking Services. To help make policy-based management a reality, Cabletron earlier this year submitted an Internet Draft for a protocol that would let network managers configure multiple switches with policy information from a centralized control point.

This emphasis on centralized policy control is key. Most of us agree that applications or users should not be allowed to unilaterally decide what they want from the network. After all, who would ask for a low priority?

However, these efforts to define policy-based management in the LAN beg the question: How much control do you need in the LAN, anyway? One school of thought is you can solve any problem with enough bandwidth, and bandwidth in the LAN is essentially free.

When compared with WAN bandwidth, that adage may be true. But the reality is many organizations are buying 100Base-T ports on LAN switches and routers to increase their network bandwidth, and these ports aren't free. Upgrading your backbone to Gigabit Ethernet isn't free, either.

These policy-based schemes could extend the life of your existing network equipment by letting you better utilize the bandwidth you already have. However, there's a catch-22 here.

To get any type of bandwidth control or quality of service out of LAN switches, you need switches with a multilevel queuing system and preferably hardware-based support for 802.1q tags — and that means new LAN switches. So when you purchase LAN switches, keep these features in mind.

One issue that's open for debate is whether policy-based controls should be on all the time — as in the Cabletron and NetManage models — or triggered only in the case of congestion, as in 3Com's scheme.

Many organizations will want the flexibility to handle certain traffic in special ways all the time.

But this high-touch activity could have a negative effect on the performance of switches and routers.

3Com's adaptive approach, whereby policies only kick in when the network is heavily loaded, avoids the overhead of constant policy enforcement. On the other hand, it is unclear what effect "turning on" policies might have on the network.

Cabletron avoids the high-touch problem by having a connection-oriented LAN switching scheme. Policies are applied once at connection setup, and then packets are forwarded without additional processing.

Policy-based management has the potential to deliver significant benefits. But you need to carefully consider what equipment you might need to support it. A pilot deployment would be wise to ensure the technology works as advertised.

Petrosky is a senior analyst at The Burton Group, an information services firm that provides in-depth technology analysis. She can be reached in her San Mateo, Calif., office at (415) 572-0560 or via the Internet at petrosky@tbgroup.com.



MARTY BRAUN

initial configuration we provided you, which was the product version the article described as having configuration difficulties.

Given the tight time constraints we were under to meet the review's deadline, we were unable to put the product through the extensive testing regime our products undergo prior to being sent to customers. Consequently, we were unaware of the motherboard controller conflict in the initial system sent for review. Many of our customers have Quad RAID 5 server configurations that are working exceptionally well.

Although the product that experienced the configuration problems was not yet available in the exact same configuration for SAG customers, we felt *Network World's* controlled environment provided a great opportunity to highlight new network technologies, which we are now poised

to offer to our enterprise clientele on a large scale.

When issues did arise with the product, we treated *Network World* as we would any other customer by providing 24-hour, on-

site support — effectively resolving the issue with as little impact on productivity as possible.

We feel this approach to systems development, and our commitment to customer service and support, represents a distinct advantage over other developers that provide server and network offerings with limited flexibility, at a much greater cost to the enterprise they seek to serve.

We regret *Network World's* misunderstanding of our product's shipping status and its consequential impact on the review, especially since the product actually tested provided "screaming" results at an extremely cost-effective price.

Frank Stumpo
Director of engineering
SAG Electronics
North Andover, Mass.

Lee Schlesinger, *Network World* test center director,
responds: Had we been told

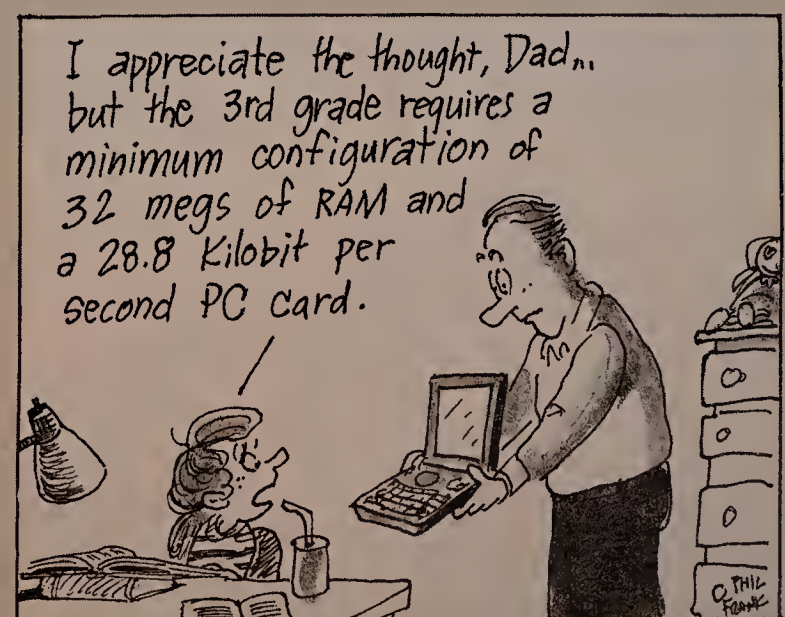
the product was not shipping, we probably would not have reviewed it until such time as it was.

As we did not know, the shipping status had no impact on our

testing results.

As a rule, we expect the products we review to be in the same condition as customers would get, and we try to make that clear to all vendors.

Teletoons

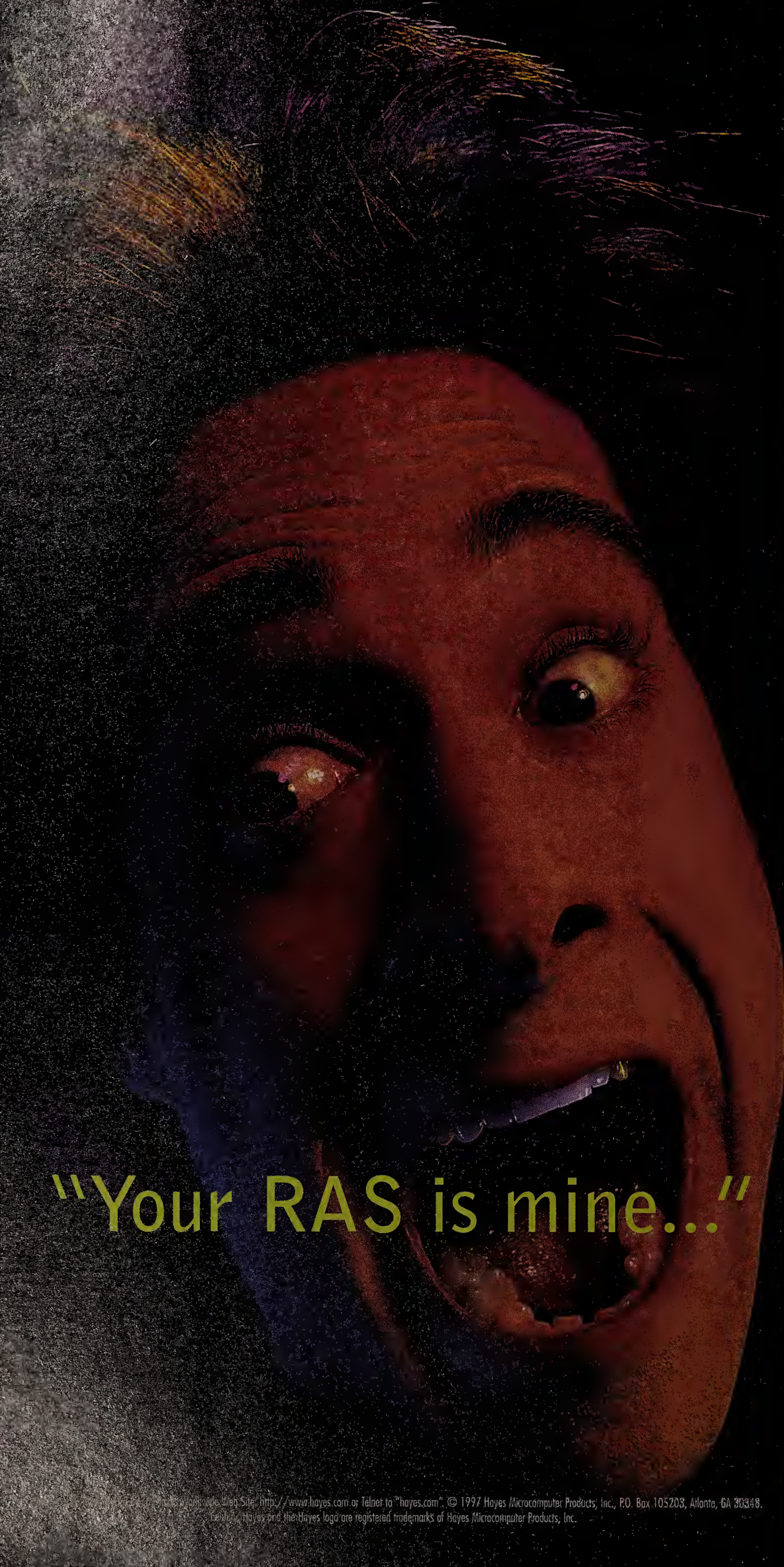


Phil Frank and Joe Troise babab@sfgate.com

www.nwfusion.com



Go to Fusion to read the server review in question, including complete test results and more details about our test methodology. Enter the number above in the DocFinder box on the home page.



"Your RAS is mine..."

**...the rabid salesman
screamed as he combed the
halls with a noose.
"I can't log in!
Who's the IS guy who picked
the remote access server?"
Cornered, I grabbed a stapler.
"If I'm going out,
I'm taking you with me!"
I screamed as...
I woke up in a cold sweat.**

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How fast do you want to get there?

Circle Reader Service #2

Netscape legs out Web win

Narrow victory highlights common threads among five popular Web servers.

By Joel Snyder

Visitors to your Web site may not be able to tell which Web server software you're running, but you need to understand the differences inside out to pick the package that's right for you.

Though there are more similarities than differences in the underlying code, it is the added features that distinguish the high climbers from the basement dwellers.

While the Buyer's Guide chart on page 42 lists all the players and products, we brought the leading contenders into our labs for a closer look.

The best server we looked at, Netscape Communications Corp.'s Enterprise Server 2.0a, led the pack on the strength of its setup, management and reporting tools. StarNine Technologies, Inc.'s Macintosh-based WebSTAR 2.0.1 and O'Reilly & Associates, Inc.'s WebSite Professional 1.1f also offer a comprehensive management tool kit, a full set of tools for the Webmaster and excellent documentation.

Microsoft Corp.'s Internet Information Server (IIS) 3.0 and The Apache Group's Unix-based Apache 1.1.3 server are solid products, too, but offer less support for network managers and Webmasters. With the exception of WebSTAR and Apache, the products all run on Windows NT.

The servers we reviewed came from the top products in the Netcraft Web Server Survey (www.netcraft.co.uk/survey/). Netcraft, Ltd. periodically scans the Internet and tracks which software is running on each server. We discarded duplicates, family members (only one server to a developer) and customized Internet service provider packages to come up with the five most popular servers. We wanted to include the next most popular server, Process Software Corp.'s Purveyor, but Process told us they were revising Purveyor and chose not to participate.

During our review, Netscape, Microsoft and Apache all had beta products out. To keep the playing field level, we restricted our review to shipping products.

Managing Web servers

At successful sites, a Web server may be called to



VICTORIA RAYMOND

service between 100,000 and one million transactions per day. This means you need good management tools to monitor server performance, configure multiple servers, analyze log results and manage security.

BUYER'S GUIDE LINEUP

Scorecard: **Page 40.**

How we did it: **Page 40.**

Assessing Web server options: **Page 41.**

Complete product chart: **Page 42.**

Likewise, Webmasters and Web application developers need a full package of services, extensive documentation and example applications, a strong server API and a rich set of built-in tools, such as server-interpreted HTML and access to databases — all things we looked for in our tests.

There are varying approaches to server management. For example, Microsoft's IIS is fully integrated with the Windows NT security architecture and authorization databases. Users authenticating themselves to IIS must have a user name in an NT domain. IIS bases all security decisions on the rights and privileges of that user name. NT's groups and access control lists are used to determine whether pages can be seen by a Web server client.

All of the other Web servers we reviewed use a more traditional approach. User authentication is completely separate from the security domain of the system running the Web server. For example, Apache

lets the network manager store realms, user names and passwords in simple text files or, when a large number of users is involved, in a database. WebSTAR, Enterprise Server and WebSite Professional have similar mechanisms, separate from normal server security, for maintaining access control to Web pages. Neither approach is inherently better than the other, so let your individual needs determine which approach is best for you.

Management interfaces also reflect vendors' differing approaches. The most primitive and least usable is Apache's, which relies on a set of poorly documented configuration files, typically modified with a text editor.

At the other end of the spectrum is Enterprise Server, which does an excellent job of comprehensive server management and some monitoring using a Web browser.

WebSTAR's management interface — available via a separate application over an AppleTalk network or via a Web browser over TCP/IP — is also well designed, although WebSTAR offers fewer configuration options than Enterprise Server.

IIS and WebSite Professional are best managed through their Windows-based interfaces, although IIS does have a subset of management available via Web browsers. All products can be managed remotely (if you consider telnet a remote management client in Apache's case).

Managing and monitoring performance

Performance management is a special subset of Web server management. Windows NT network managers have an automatic advantage over Macintosh and Unix managers in the form of the Windows Performance Monitoring tool. All three NT-based Web servers provide information in standard Performance Monitoring form, which lets network managers visually monitor load and throughput, and capture performance information for short- and long-term analysis with familiar tools.

ScoreCard at a glance

Netscape Communications Corp. Enterprise Server 2.0a	8.4
O'Reilly & Associates, Inc. WebSite Professional 1.1f	8.2
StarNine Technologies, Inc. WebSTAR 2.0.1	7.6
Microsoft Corp. Internet Information Server 3.0	7.5
The Apache Group Apache 1.1.3	5.9

WebSite Professional also provides current statistics through a special "stats" URL for access via HTTP. WebSTAR managers can get an idea of current load by using the management interfaces.

At the high end, both Microsoft and Netscape export statistics via an SNMP subagent, which eases integration of Web servers into existing SNMP-based network monitoring systems.

Performance optimization, such as internal disk caching, is missing or undocumented in most of the servers we looked at. WebSTAR includes an internal disk cache, which is tunable by the network manager. The other products appear to rely on the operating system for any performance optimization.

Other Web server performance optimizations are more subtle. With the exception of Netscape's Enterprise Server, all the servers we reviewed support HTTP persistent connections. This is an important new feature; when it becomes widely available in browsers and servers, performance across the Internet as a whole will increase significantly. Persistent connections let the client and server move multiple pages or images within a single TCP connection. This is key because latency and the TCP three-way handshake make a page with 10 images load much more slowly than raw bandwidth would otherwise allow.

Apache and Netscape also take seriously the issue of performance over TCP/IP. When we installed Netscape on our Windows NT system, it offered suggestions for increasing capacity and throughput by adjusting Windows Registry values for us with permission. Likewise, Apache maintains a comprehensive set of tips for increasing HTTP capacity and tuning the operating system on supported Unix platforms.

No topic causes more stress between Webmasters and network managers than log files. While Webmasters revel in analyzing the demographics of every site visitor, network managers fear the load of managing what can

be hundreds of megabytes of log files every week. Webmasters want maximum information, such as the reverse Domain Naming System lookup of each visitor's IP address, while network managers nervously eye the cost of retrieving such data.

Good Web servers automatically roll over log files at predefined intervals. All the servers except Apache have this capability built in. Microsoft's IIS also allows you to specify that log files roll over when they reach a predetermined size. All the servers let you vary log formats somewhat.

Taking all these factors into consideration, we concluded Netscape's management interface was the strongest and most flexible. Only a handful of features

were not exported from the server to the Web-based management interface. The combination of a strong remote management capability, Windows NT performance monitoring and SNMP management make Enterprise Server truly enterprise-ready.

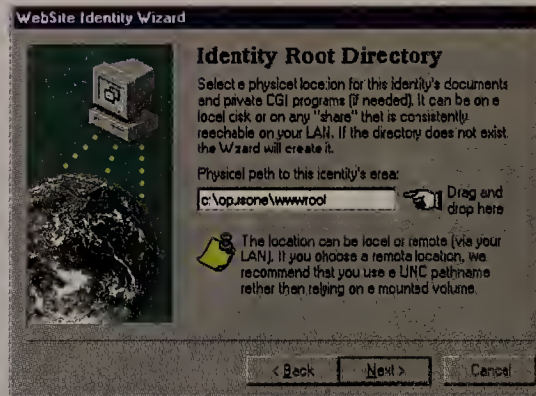
If you prefer to edit configuration files (as is required in Apache), Netscape's server also supports that interface, with full documentation on how to maintain the configuration manually.

Good deals for developers

As noted above, Webmasters have slightly different needs than network managers. They want servers that nurture their creativity and they need easy ways to

build effective Web sites.

Bundled example applications help Webmasters get off to a fast start by giving them code to model. Servers such as WebSTAR, with more than 100 built-in sample applications, or Netscape's Enterprise Server,



WebSite Pro uses the familiar wizard format to add new virtual servers. Excellent online help guides even the most confused network manager through a simple dialogue.

which has dozens of examples in its App-Foundry, provide fertile ground for the imaginations of Webmasters to grow new applications and modify existing ones.

O'Reilly doesn't offer the same broad Webmaster's kit but makes up for it with outstanding developer documentation. These vendors have made it easy for developers to get a good start.

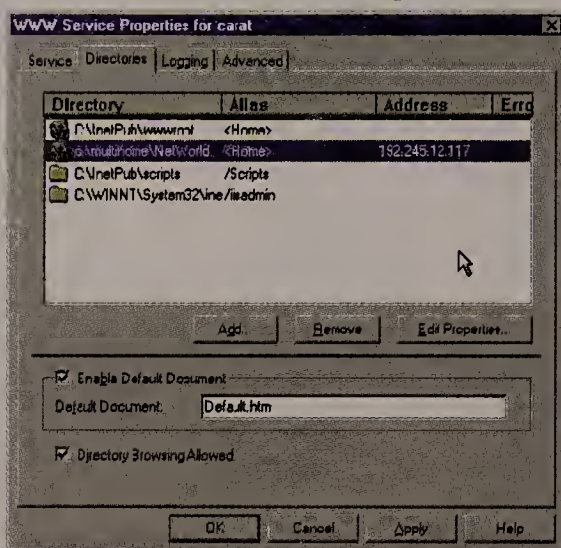
Apache, which has a small but respectable kit of sample applications, doesn't measure up to the others because it lacks good documentation. Apache has many of

the same built-in features but little definitive documentation, so it's much harder to figure out how to use them. This makes Apache a high-overhead product: free to acquire, but expensive when you want to push the

HOW WE DID IT

We set up 14 tasks for each server based on feedback we got from a team of Webmasters and network managers. We asked which tasks they most commonly performed with their Web servers. Among the most common responses were: to test writing Common Gateway Interface programs, connecting to databases, preprocessing URLs to handle pages that moved, building special error message pages and performing other developer tasks. We also tested typical manager tasks, such as starting and stopping the server remotely, configuring additional Multi-purpose Internet Mail Extension types and managing log files.

Performance in Web servers is as sticky a topic as we'd care to visit. There is no real agreement about what really counts in Web server performance: latency, throughput, transactions per second, or even what mix of the stochastic traffic environment of the Internet. Reproducing realistic loads is even more difficult. And the manufacturers are no help either: Both Microsoft and Netscape explicitly forbade us from printing benchmark results as part of their standard license agreements. We, therefore, sidestepped the question this time.



Microsoft's Internet Information Server lets the server manager add virtual Web servers at multiple IP addresses with only a few clicks and keystrokes.

ScoreCard

Overall score

Setup, configuration and management (30%)

Monitoring tools and reports (20%)

Programming tools and Webmaster support (20%)

Database connectivity (10%)

Security and flexibility (10%)

Documentation (10%)

Enterprise Server 2.0a	WebSite Professional 1.1f	WebSTAR 2.0.1	Internet Information Server 3.0	Apache 1.1.3
8.4	8.2	7.6	7.5	5.9
9	8	8	8	6
8	7	6	8	6
9	9	9	7	7
8	9	7	9	4
8	9	8	6	7
7	8	7	6	4

Scores based on a scale of 1-10. Percentages are the weight given each category in determining overall score.

Netscape Communications Corp. ENTERPRISE SERVER 2.0a	O'Reilly & Associates, Inc. WEBSITE PROFESSIONAL 1.1f	StarNine Technologies, Inc. WEBSTAR 2.0.1	Microsoft Corp. INTERNET INFORMATION SERVER 3.0	The Apache Group APACHE 1.1.3
Pros				
▲ Good documentation	▲ Excellent documentation	▲ Powerful server-interpreted HTML	▲ Inexpensive	▲ Inexpensive
▲ Enterprise orientation	▲ Good database access	▲ Easy installation and management	▲ Good database access	▲ Easy access to source code
▲ Easy to configure	▲ Extensive Webmaster tool kit	▲ Powerful scripting link to API	▲ NT security integration	▲ Stable
▲ Webmaster/performance support			▲ Available index server	
Cons				
▼ Expensive	▼ Depends heavily on third-party tools	▼ Macintosh platform may be unpalatable to some	▼ Hard to get complete documentation	▼ Only brief documentation
▼ Weak server-interpreted HTML		▼ API programming can be difficult in C	▼ Confusing product packaging	▼ Support dependent on Internet
			▼ Management via Regedit weak	▼ Weak management and monitoring features

boundaries.

In contrast, Microsoft, which has almost no developer's tool box, pushes undocumented and proprietary FrontPage extensions, which are designed to lock developers into an all-Microsoft world. FrontPage users have the benefit of an integrated development environment that links to powerful server extensions. But server managers who want documentation on the interaction between FrontPage clients and servers are out of luck.

When sample code is insufficient to illuminate a task, Webmasters must become software developers, using the generic Common Gateway Interface (CGI) or a server-specific API. All of the servers we tested support the same basic CGI, and a simple CGI program we wrote in C to display HTTP headers ran almost without change on all five servers.

For best performance, however, Web site developers are pushed into using a server-specific API. While faster than using these APIs, this is also much riskier. Because API-based applications are tightly integrated with the server, a bug in the developer's code could take the entire server down. WebSite Professional includes so-called FaultGuard technology, which provides some help by isolating API modules and using built-in Win32 features to catch some kinds of errors before catastrophe strikes.

All five servers offer their own APIs, but Apache, Microsoft and O'Reilly are all heavily influenced by Netscape's pioneering work in developing Netscape API. O'Reilly's WebSite Professional also includes a subset of the Microsoft server API, so some applications written to Microsoft's Internet Server API will run un-changed on O'Reilly's server.

The one oddball is WebSTAR's W*API, which offers similar features but is based on an entirely different architecture.

We found it was easiest to write simple programs for Enterprise Server, mostly because Netscape's documentation was the easiest to understand and the best laid out. Also, Netscape does not require programmers to know too many details about the operating system interface.

(Although APIs and CGI scripts are crucial to high-end Webmasters, sometimes programming is not necessary. See Network World Fusion for a discussion of each product's techniques for "programming without programs.")

To go along with programming features, good Web servers should have built-in support for full-text searches of all HTML files on the site. Microsoft, Netscape and O'Reilly all match this need with speedy search engines.

Netscape does an excellent job, offering a full-text search engine and something Netscape calls a catalog engine, which offers different views of a Web site by title, classification, author and modification date. These are included in the features of the basic Enterprise Server.

Netscape's approach is particularly elegant because it includes the ability to automatically reindex and recatalog a site at regular intervals, assuring an up-to-date index at all times.

WebSite Professional also has a full-text indexer in its Webindex and Webfind tools, while Microsoft brings indexing to the Webmaster with the free Index Server add-on to IIS. Although Microsoft's Index Server has capabilities Netscape's doesn't — for example, it can index Microsoft Excel spreadsheets, should you want to do such a thing — having to manage two different applications seems an un-necessary burden on the Webmaster.

Bottom line

Taking the needs of Webmasters and network managers into account, Netscape gets the nod as best all-around Web server. Approachable in small sites, Enterprise Server also brings the kind of management tool kit and Webmaster support that large servers need. The ease of moving between Windows NT and Unix platforms is a plus, too.

For smaller sites, Webmasters will love WebSite Professional. Outstanding documentation, reasonable pricing and a long list of features make it an excellent choice when the Webmaster is also the network manager.

WebSTAR is a well-engineered Web server, but it is

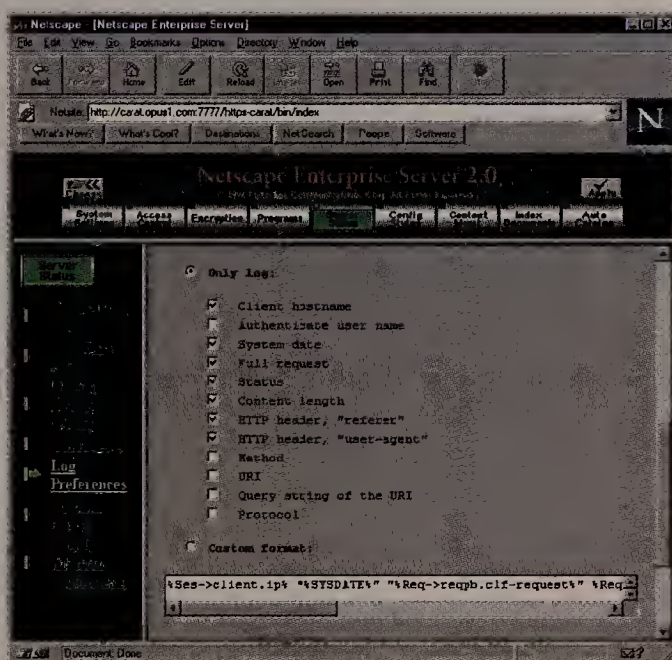
also tied to the Macintosh platform. In many MIS departments, "religious" beliefs dictate that a Macintosh cannot serve as a corporate Web server.

We disagree, but its Macintosh roots are destined to hold WebSTAR back.

Fundamentally, Microsoft's IIS is a good product that offers some features no other server does, such as inte-

Find more Web server product details online, including:

- ▶ An extended discussion on the Web application development tools supplied with the five Web servers we tested.
- ▶ A comparison of Microsoft and Netscape Internet suites.
- ▶ A link to the WebCompare site, which includes information on benchmark efforts, designing intranets, FAQ files, descriptions of product features and another comparison chart.
- ▶ A link to the Netcraft site, where you'll find the results of an electronic survey on the most widely used Web servers. You can also submit a query to find out which server a particular site is currently running. Netcraft also provides information about the Secure Sockets Layer protocol and other Web security issues.
- ▶ A link to a site that explains Standard Performance Evaluation Corp.'s SPECweb96 benchmark, which attempts to measure the highest number of HTTP operations per second that a given Web server can perform.
- ▶ Our Buyer's Guide on Web server management tools.



Netscape's browser-based management gives you complete control of the Web server from anywhere on the LAN or Internet. Fairly complex operations, such as log reporting, archiving and formatting are all handled well.

Wading through the Web server options

By Kathy Scott

Vendors are coming out with new Web server products at a furious pace, each claiming to outdo the next. But, as the chart on page 42 shows, there are more similarities than differences in the vendors' wares, so you'll need a sound buying strategy and an understanding of some key attributes to ensure you choose the Web server that's right for you.

The first step in selecting a Web server package is determining what you need it to do and which type will fit best with your existing infrastructure, says Thomas Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J. Resist being

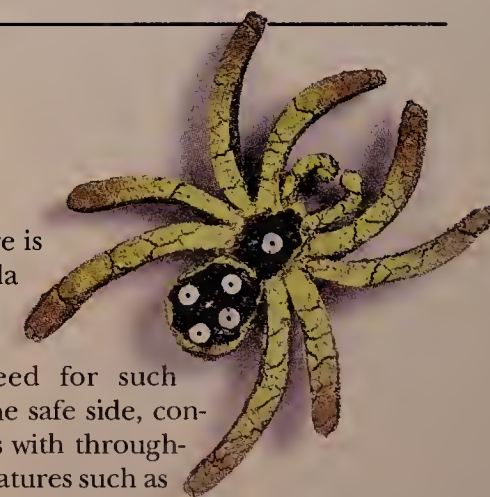
drawn in by claims of superior performance or some other feature, he says. The claims may be true, but if it means you'll have to support a new operating system and implement new management practices, it may not be worth it.

You'll also need to estimate the size and scope of your Web site, as well as how it will be integrated into your business. "Choosing the right product will become more complicated if you have a popular Web site that gets hundreds or more hits per hour, or your content is mostly dynamic," says Eric Rose, senior consultant at Data-base Technologies, Inc. in Newton, Mass., a Web site data integration and data-

base consultancy.

Rose says there is no simple formula for calculating how much horsepower you'll need for such sites. To be on the safe side, consider Web servers with throughput-enhancing features such as Open Market, Inc.'s FastCGI, he says.

Only four of the products in the chart currently support FastCGI, an extension to the Common



BUYER'S GUIDE

WEB SERVER SOFTWARE

Company	Product	Operating system	Processor type	Requirements (In bytes)	Logging features	Security	APIs and scripting tools	Special features	Price
					CERN format NCSA format Automatic archiving Performance log Browser types used Usage reports			SMP Conferencing DBMS included DNS server E-mail server FTP server Gopher server News server Proxy to other Web server Search engine	
The Apache Group (410) 931-3157 www.apache.org	Apache Web Server 1.2	OS/2, Unix	Alpha, Intel 80486, Pentium, Pentium Pro, PowerPC	RAM: 16M Disk: Not specified	• • •	SHTTP, SSL	Basic CGI, JavaScript API	• • • • •	Free
C2Net Software, Inc. (510) 986-8774 www.c2.net	Stronghold 1.3.4	Unix, Windows NT	Alpha, Intel 80486, Pentium, Pentium Pro, MIPS, PowerPC	RAM: 4M Disk: 20M	• • •	SSL	Fast CGI, Apache API	• • • • •	\$495-\$1,995
Connect, Inc. (800) 262-2638 www.connectinc.com	OneServer 1.2	Unix	SPARC, SPARC Ultra, HP	RAM: 64M Disk: 250M	• • • • •	Proprietary, SSL	Basic CGI, NSAPI	• • • • •	Starts at \$80,000
ExperTelligence, Inc. (805) 962-2558 www.webbase.com	WebBase 4.1	Unix, Windows 3.X, NT, 95	Intel 80486, Pentium, Pentium Pro	RAM: 16M Disk: Not specified	• • • • •		WebBase	• • • • •	\$595
Frontier Technologies Corp. (800) 929-3054 www.frontiertech.com	Intranet Genie 1.3	Windows NT	Intel 80486, Pentium	RAM: 16M Disk: 20M	• • • • •	Proprietary, SSL	Basic CGI, Fast CGI, Windows CGI, ISAPI	• • • • •	\$2,495
GLACI, Inc. (414) 475-6388 www.glaci.com	SecureServ 3.16	NetWare NLM	Intel 80486	RAM: 16M-64M Disk: 300M-1G	• • • • •	Proprietary, SSL	Basic CGI, Perl scripting	• • • • •	\$475-\$975
IBM (800) 426-3333 www.ibm.com	Internet Connection Secure Server 4.2	OS/2, Unix, Windows NT	Intel 80486, Pentium, Pentium Pro, PowerPC	RAM: (1) Disk: (1)	• • • • •	SSL	Basic CGI, JavaScript API, NSAPI, Internet Connection API	• • • • •	\$295 (2)
Lotus Development Corp. (617) 577-8500 www.lotus.com	Domino 4.5	NetWare, OS/2, Unix, Windows NT, 95	Alpha, Intel 80486, Pentium, Pentium Pro, PowerPC, SPARC	RAM: 24M-128M Disk: 150M-500M	• • • • •	Proprietary, SSL	LotusScript	• • • • •	\$995-\$2,995
Luckman Interactive, Inc. (800) 711-2676 www.luckman.com	Web Commander 2.0	Windows NT, 95	Intel 80486, Pentium, Pentium Pro	RAM: 16M Disk: 60M-160M	• • • • •	SHTTP, SSL	Basic CGI, Windows CGI, ISAPI	• • • • •	\$299-\$399
MDG Computer Services, Inc. (630) 497-0220 www.mdg.com	Web Server 4D 1.0.5V4	MacOS	PowerPC, Motorola 68030, 68040	RAM: 10M-200M Disk: 10M-50M	• • • • •		Basic CGI	• • • • •	\$245-\$1,090
Microsoft Corp. (800) 426-9400 www.microsoft.com	Internet Information Server 3.0	Windows NT	Alpha, Intel 80486, Pentium, Pentium Pro, PowerPC	RAM: 16M-4G Disk: 125M (3)	• • • • •	Proprietary, PCT, SSL	Basic CGI, Windows CGI, ISAPI, JavaScript API	• • • • •	Free
MMB Development Corp. (310) 318-1322 www.mmb.com	TEAMate/2.06	Unix	Not specified	RAM: 16M Disk: 10M	• • • • •		Basic CGI, JavaScript API, proprietary API	• • • • •	\$2,995-\$50,000
Mustang Software, Inc. (805) 873-2500 www.mustang.com	Wildcat Interactive Net Server	Windows NT, 95	Intel 80486, Pentium, Pentium Pro	RAM: 32M Disk: 25M	• • • • •		Basic CGI, proprietary scripting language	• • • • •	\$99-\$3,995
Netscape Communications Corp. (415) 937-2555 www.netscape.com	FastTrack Server 2.01	Unix, Windows NT, 95	Alpha, Intel 80486, Pentium, Pentium Pro, MIPS, PowerPC	RAM: 32M Disk: 35M	• • • • •	SHTTP, SSL	Basic CGI, Windows CGI, JavaScript API, NSAPI	• • • • •	\$295
	Enterprise Server 3.0	Unix, Windows NT	Alpha, Intel 80486, Pentium, Pentium Pro, PowerPC	RAM: 32M Disk: 60M	• • • • •	Proprietary, SSL	Basic CGI, Windows CGI, JavaScript API, NSAPI, CORBA	• • • • •	\$1,295
Novell, Inc. (800) 543-1267 www.novell.com	Web Server 3.0	NetWare NLM, IntranetWare	Intel 80486, Pentium, Pentium Pro	RAM: 32M Disk: 1G	• • • • •	SSL	Basic CGI, Perl 5.0 and NetBasic	• • • • •	Free
O'Reilly & Associates, Inc. (707) 829-0515 www.software.ora.com	WebSite 1.1	Windows NT, 95	Intel 80486, Pentium, Pentium Pro	RAM: 12M-16M Disk: 10M	• • • • •		Basic CGI, Windows CGI, ISAPI, WebSite API	• • • • •	\$59 (4)
	WebSite Professional 1.1	Windows NT, 95	Intel 80486, Pentium, Pentium Pro	RAM: 12M-16M Disk: 35M	• • • • •	SHTTP, SSL	Basic CGI, Windows CGI, ISAPI, WebSite API	• • • • •	\$499
Open Market, Inc. (617) 949-7000 www.openmarket.com	Secure Web Server 2.1	Unix	Alpha, MIPS, SPARC, RS/6000	RAM: 32M Disk: 100M	• • • • •	PCT, SSL	Basic CGI, Fast CGI, Web Server API	• • • • •	\$895-\$1,495
Process Software Corp. (800) 722-7770 www.process.com	Purveyor Encrypt WebServer for OpenVMS	OpenVMS	Alpha, VAX	RAM: Not specified Disk: Not specified	• • • • •	SSL	Basic CGI, Fast CGI, ISAPI	• • • • •	\$995
StarNine Technologies, Inc. (510) 649-4949 www.starnine.com	WebStar 2.0.2	MacOS	PowerPC	RAM: 1.5M Disk: 5M	• • • • •	SSL	Basic CGI, WebStar API, WebStar applet API, AppleScript	• • • • •	\$499

Products highlighted in color were tested • Blue Ribbon Award winner

Footnotes: (1) Same as for the operating system.
(2) Bundled with OS/390 and OS/400.

(3) Disk space is application-specific.
(4) Comes with the *Building Your Own WebSite* book

CORBA: Common Object Request Broker Architecture
ISAPI: Internet Server API

NCSA: National Center for Supercomputing Applications
NSAPI: Netscape Server API

PCT: Private Communication Technology
SHTTP: Secure HTTP

CHART COMPILED BY KATHY SCOTT
SMP: Symmetric multiprocessing
SSL: Secure Sockets Layer

Gateway Interface for executing programs within a Web server. Proponents say FastCGI reduces content retrieval time and chews up fewer server resources than basic CGI, which is supported by the vast majority of products.

With FastCGI, once a Web server starts a process, such as handling requests for data from an external source, the process

keeps running to handle subsequent requests. With basic CGI, a separate process starts for each data request and, upon completion, shuts down.

Rose says this constant starting and stopping of processes results in longer data access time and drains the server's computing power. With FastCGI, he says, the server is not burdened with the extra

load, and overall performance improves.

Web server APIs, such as Netscape Communications Corp.'s Netscape Server API and Microsoft Corp.'s Internet Server API, are similar to FastCGI but are typically tied to a specific programming language and Web server platform.

FastCGI, Open Market claims, can

work with applications written in different languages and will run on just about any Web server.

Another way to increase throughput is to stack up multiple servers and let them share the load, says Constantine Spathis, applications development manager at Poppe Tyson Interactive in New York, an interactive marketing communications and technology company. "Many times, companies make Web server choices without adequately considering the options for making slower servers seem faster," he says.

A number of vendors, such as C2Net Software, Inc., Connect, Inc., Lotus Development Corp., Microsoft, Mustang Software, Inc., Novell, Inc. and StarNine Technologies, Inc. indicate their Web servers work in a load-sharing environment.

If you'd rather not load-share, take a look at any of the 11 products that run in a symmetric multiprocessing environment. Sometimes throwing more processing power at software that tends to operate slowly can make it run faster.

Examining the type of content you'll provide will also steer you in one direction or the other. For example, if you will be pulling data from database management systems, you'll want to look over the types of external database connections Web servers provide.

Only six of the vendors listed in the chart — The Apache Group, IBM, MMB Development Corp., Open Market, Process Software Corp., and StarNine Technologies, Inc. — do not provide products with some sort of external database link. The most popular method is to include support for Microsoft's Open Database Connectivity protocol.

O'Reilly & Associates, Inc. has a slightly different approach. It includes Allaire Corp.'s Cold Fusion application development tool with its WebSite Professional 1.1. The Cold Fusion tool enables developers to code data access commands into HTML pages.

When those pages are requested, the Web server executes the commands, brings back needed data and plops it into the page.

Kevin Tolly, president of The Tolly Group, a consulting and testing firm in Manasquan, N.J., says Cold Fusion is easier to use than Perl or Java and more powerful and faster than basic CGI.

Security will also be an issue, especially for encrypting transactions between the browser and server. The Secure Sockets Layer seems to be gaining more support in this area than the competing Secure HTTP protocol that offers similar functionality. Microsoft's Private Communication Technology protocol also has few supporters.

Lastly, don't forget to factor the type of hardware you'll use into the equation.

"Any hardware that reduces the fetch time of your Web content, usually through caching, huge memory or other specialized hardware, will typically improve your response time," Tolly says. ■

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Continued from page 1

"They certainly jumped at that and resolved the situation," Fernandes says.

Make no mistake, FPL enjoys a solid rapport with Nortel, and both companies have worked closely on the now 10-month-old project. But months of long weekends, taxing learning curves and the prospect of evaporating savings were enough to fray the nerves of even the normally reserved Fernandes.

FPL learned a valuable lesson: Don't take your vendor's knowledge of its ATM product line for granted. FPL lost four precious weeks because Nortel supplied DS-1 inter-

ing data back at any given moment. The problem was the DS-1 cards Nortel originally supplied did not guarantee time-slot alignment, so the Miami hosts had no way to be sure where data was coming from.

Nortel eventually agreed to replace the DS-1 cards, but not before the vendor ran its own tests to confirm FPL's analysis — a move that burned more precious project time.

Even after FPL bolted in and successfully tested the new cards, the episode was not quite over. The FPL engineers still had to redefine the logical permanent virtual circuit (PVC) connections in the network,

which changed when Nortel swapped out cards that support four DS-1s each for cards that support a single T-1. PVC reconfiguration proved a grueling, time-consuming process.

The moral? "Don't just take your vendor's word" about its product capabilities, Carpani says. "It's not that they're trying to snow you, but they have a learning curve, too."

Break the backbone

With the DS-1 episode behind them, Carpani and Fernandes started carving

DS-1 circuits out of the company's DS-3 ATM backbone to provide bandwidth to its Power Supply business unit, the first to be cut over to the ATM net.

At about the fifth or sixth DS-1, service began to drop across the board. FPL's Power Supply business unit started noting a rash of circuit errors; the ATM backbone's circuits began crashing across the state. The CPUs on the seven Magellan Passport ATM switches anchoring the network unexpectedly registered load rates between 80% and 100%.

That's when Fernandes read the riot act to Nortel. "We come from a transmission background that says a DS-3 should handle

This is the third in a series of articles chronicling FPL's ATM implementation.

● **Part 1, published June 10, 1996, discussed the business case, project objectives and the RFP process.**

● **Part 2, published Oct. 21, 1996, revealed the process behind the selection of FPL's ATM switch vendor and the initial backbone switch implementation.**

You can find both of these stories on Network World Fusion.

www.nwfusion.com



28 T-1s," Fernandes says. "When the network is dying at five or six T-1s, it's not good."

The Power Supply unit was relying on the ATM network to enable it to dump costly leased lines previously used to ferry data. The anticipated savings were even factored into the 1997 budget, meaning Power Supply didn't have the extra dollars to spend on continued use of the leased lines.

"Our goal coming in was to reduce costs but not put at risk the performance and reliability of the lines we need," says Tom Boudewyns, supervisor of systems development for Power Supply.

Nortel suggested a major software revision to correct a design limitation of Release 1.3.9 of the Magellan Passport switch software. In essence, the software assembled and disassembled ATM cells in the CPU of each ATM interface card instead of taking advantage of onboard ASICs designed to handle that type of processing at much faster rates, according to Nortel's Narayanan.

That meant cells were being torn apart and reborn at each switch instead of at origination and destination points. Also, the software did not take advantage of route computation routines or ATM adaptation layer processing.

"[The ATM switches] were just running flat out," Narayanan says.

The fix was Release 3 of the switch code, which carries voice and data traffic as cells end to end, so it does not have to break up traffic at every interface.

Improved routing also meant that routing tables would not be loaded onto every ATM interface card. Instead, you physically define trunk characteristics, such as the type of traffic carried, and the routing system automatically calculates the best path. That processing, too, is now done in ASICs, not at the switch CPU, Narayanan says.

Even with Release 3 installed, FPL noticed switches were still running at between 80% and 100% capacity. So Fernandes and Carpani spent a long weekend ripping out the logical trunking they had painstakingly defined and replaced it with the physical trunking now required in Release 3.

Time was tight, but FPL engineers ironed out the problems by year-end.

Cardinal rules

After a wild initial ATM implementation, at least three other FPL internal customers are lining up to jump on the network. And within the next few months, FPL's Telecommunications & Technology unit is planning a network expansion of sorts.

The company soon will beta-test Nortel's Cardinal, the code name for a single interface ATM switch that sits in remote offices and consolidates voice and other traffic onto a single T-1 line. Cardinal represents another step in FPL's continuing program to reduce circuit costs and replace dedicated and often underutilized lines with a single, multipurpose circuit.

"That's where we'll begin to exploit the class of service ATM offers," says Humberto Pina, the FPL senior telecommunications analyst who helped conceive the ATM project. "We'll look to assign different priori-

ties for voice, video and router traffic."

The company hopes to install 12 Cardinal edge switches this year. And Fernandes and Carpani expect to remain busy as FPL opens up its ATM network.

"Every time we add new services, we'll have to step back and adjust the switches," Carpani says. "Plus, we'll have new learning curves to scale."

Pina says the Telecommunications & Technology group also wants to tie together FPL's General Office and West Palm Beach computer centers using virtual LANs, server clustering and possibly channel extension technology, all riding on top of the ATM backbone.

Other projects call for video traffic to potentially find its way onto the statewide ATM network, as well as voice data. Today at FPL, voice switching is done PBX to PBX, but the Magellan Passports have the capability to act as giant tandem switches and pass voice across the ATM fabric.

"One thing is for sure," Carpani says. "It's not going to get boring around here." ■

FPL stands behind Nortel

Rival ATM switch makers apparently are pointing to Nortel's Magellan Passport as the reason Florida Power & Light Co. has encountered so much complexity installing ATM and defining switch attributes and settings, as chronicled in this series. FPL wants you to know in no uncertain terms: That's bunk.

"Sure, we've had some bumps," says Humberto Pina, a senior telecommunications analyst. But, he says, the Magellan is an



FPL's Pina

enterprise-class ATM switch with attributes that extend well beyond ATM. And the vendor offers an extensive array of switching interfaces

for ATM, frame relay, and other voice and data services, Pina says.

"Mixing all that up does create a high degree of complexity," he says, but it's just that ability to pack diverse services into a single box that is attractive to FPL. Plus, Nortel's support staff has been on top of complex issues, helping sort them out as they arise.

"We've become partners in this project. We're in it together now," Pina says. "Even understanding now all of the issues and the complexities, we'd still select the same ATM switch and the same vendor."

— Charles Bruno

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E-mail: The litigation time bomb

Your E-mail can become evidence, so craft a usage policy that you can stand behind.

By Loretta Prencipe

Imagine getting to your office and finding out your company is the subject of a discrimination lawsuit. Worse, at the heart of the suit are racial jokes that circulated throughout the organization via E-mail.

Sound far-fetched? Not to R.R. Donnelly & Sons Co., Morgan Stanley & Co., Inc. and Citibank N.A., each of which is defending itself against racial discrimination suits that include E-mail messages as evidence.

There is no doubt about it — E-mail is the litigator's latest smoking gun. Still, the vast majority of companies do not have an E-mail usage policy. In fact, when the Society of Human Resource Management surveyed 500 of its member firms, it found that only 34% had an E-mail policy.

A policy is a good first step in creating a legal defense or even avoiding litigation altogether. After all, consider what may be in your company's E-mail — everything from sexual and racial jokes to rants about corporate practices, bad bosses and lazy colleagues.

Furthermore, employees write statements in E-mail that they would never utter out loud. "Many employees hold a misperception that E-mail is totally private and vanishes once it's sent," says Carolyn Lerner, a Washington, D.C. attorney specializing in employment law.

As a network manager, you should educate workers about the truth. E-mail is backed up regularly, it can be downloaded to PCs and stored on a floppy disk, and it can get stored on systems that are outside your organization.

Even deleted E-mail is often recoverable using an undelete program. Indeed, it is easier to get rid of a written document than E-mail, according to Michael Overly, a California business attorney who works with clients to develop E-mail policies.

What's worse is many users treat E-mail as something that's a

little better than water-cooler gossip. However, there is an important difference. E-mail becomes a written record that can be used in a court of law. "E-mail is just like an office memorandum," Lerner says. "If you

developed by a team of network, human resources and legal professionals, Overly says.

To comply with federal and many states' laws, a written policy, at a minimum, should make these assertions: E-mail is company property; E-mail will be monitored for legitimate reasons; and employees should have no reasonable expectation of privacy when using company E-mail. The privacy issue is a troubling one, but you can deal with it (see story, this page).

Employees should be asked to read and sign the policy. But don't leave it at that. Employees should periodically be asked to review the policy and sign off on it again. You can go a step further and periodically display an interactive electronic version of your policy during sign-on.

"Don't just make up the policy and send it out," Overly says. "Employees need to be educated about why the policy was developed." Such an educa-

Go online for some sample E-mail policies, including:

- A basic policy covering the proper usage of E-mail and voice mail from the Court TV Law Center site. Fill in your company name, and away you go.
- A more intricate template for developing a custom E-mail policy from the Cyberspace Law Institute site. You can choose from a number of options to get the wording that best suits your needs.
- The E-mail policy being implemented in Hennepin County, Minn., which lays out prohibited uses and penalties for violations.
- The University of Wisconsin at Steven's Point's policy, which defines what student, faculty and administrators can do on the campus E-mail system.

wouldn't put it in a memo, don't put it in E-mail."

That's just the type of advice you can give users in a written E-mail policy — one that's been

Sidestepping the privacy issue

Warning users in writing that E-mail may be monitored might not be enough to protect you and your company from cases alleging wrongful or discriminatory review of messages.

To avoid potential litigation, you should use monitoring software such as MINEsweeper from Integralis, Inc. Monitoring software develops an automated process with a definite, reliable standard that leaves little room for personal discretion, says Michael Overly, a California business attorney who works with clients to develop E-mail policies.

Overly also says you can allay thorny workplace privacy issues by getting employees to acknowledge your right to monitor E-mail under defined conditions, something that is provided under the Electronic Communica-

tions Privacy Act (ECPA) of 1986.

"However, to be more certain, businesses should always try to obtain the permission of its employees through an E-mail use policy," Overly says.

Only some states have laws similar to the ECPA. Others grant privacy rights through common law. Typically, to prove a violation of common law privacy rights, a plaintiff must show there was an unreasonable intrusion — E-mail monitoring in this case — that would be highly offensive to a reasonable person.

In workplace privacy rights cases, courts often look for a "reasonable expectation of privacy." If employees are notified that E-mail will be monitored, their expectations for privacy should be lower.

— Loretta Prencipe

tional program will go a long way to quell employee discontent with the new policy and prevent E-mail misuse and abuse.

Try to avoid being unreasonable in your policy. For example, declaring a ban on the use of E-mail for personal reasons is too hard to enforce and unrealistic, Overly says.

However, it is appropriate to have some absolutes, including a ban on sexually explicit material or other content that is inappropriate for a professional business environment.

Such a policy works to prevent racial, sex and age discrimination suits.

Failure to prohibit such content could be used by a plaintiff to prove you created a hostile work environment, which is commonly the first step in discrimination suits.

Furthermore, make it clear to employees there will be absolutely no dissemination of trade secrets to unauthorized persons inside and outside the company. Some lawyers advise that trade secrets and other sensitive data concerning business strategies never be sent via E-mail.

In the end, toe the line on the policy. If employees are told orally that E-mail is private or won't be monitored, the policy is negated.

Prencipe is an attorney in Springfield, Va., who prefers the gentler art of freelance writing about legal and employment topics. She can be reached at LWPrencipe@aol.com.

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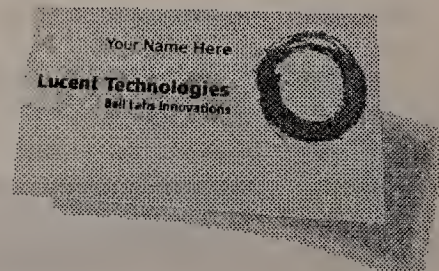
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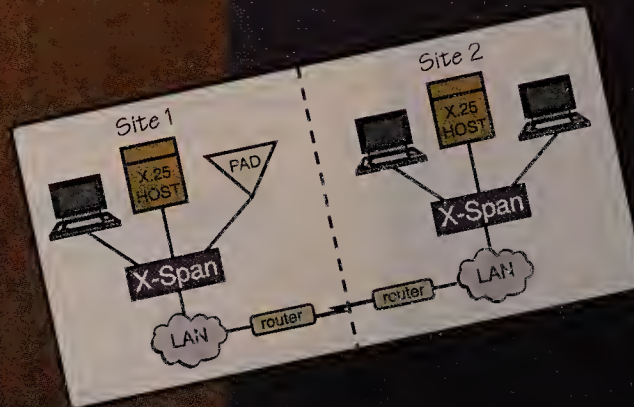
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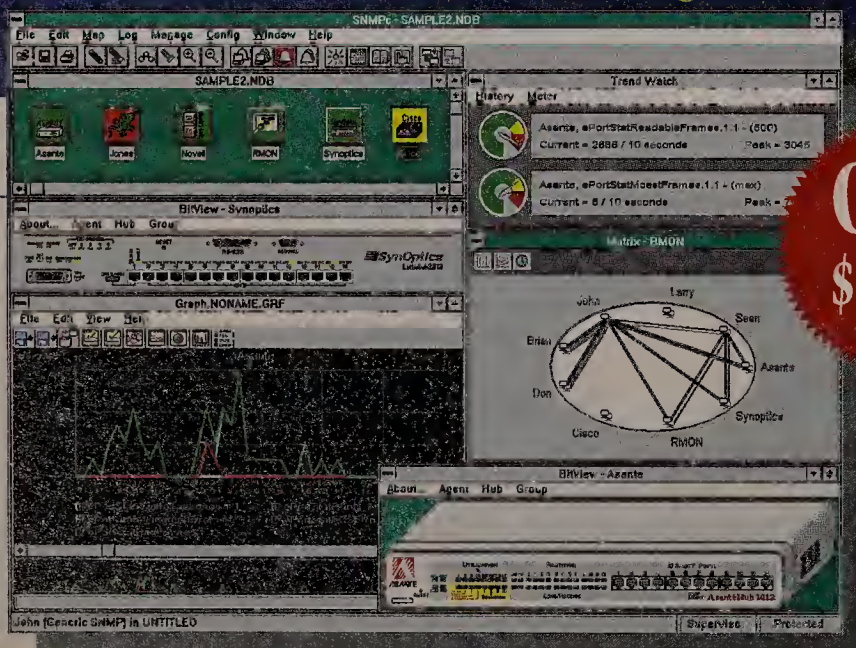
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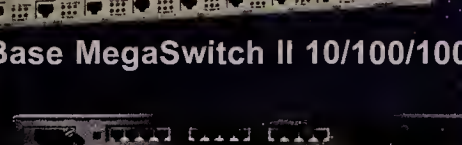
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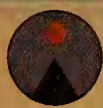
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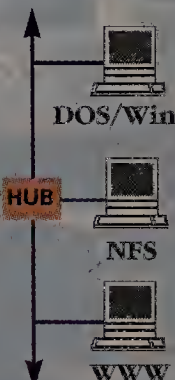


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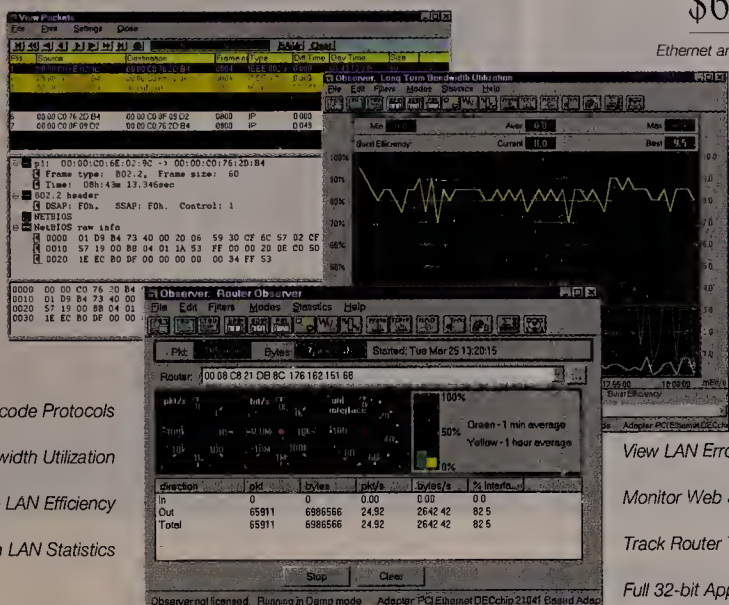


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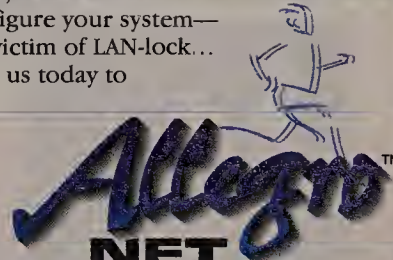
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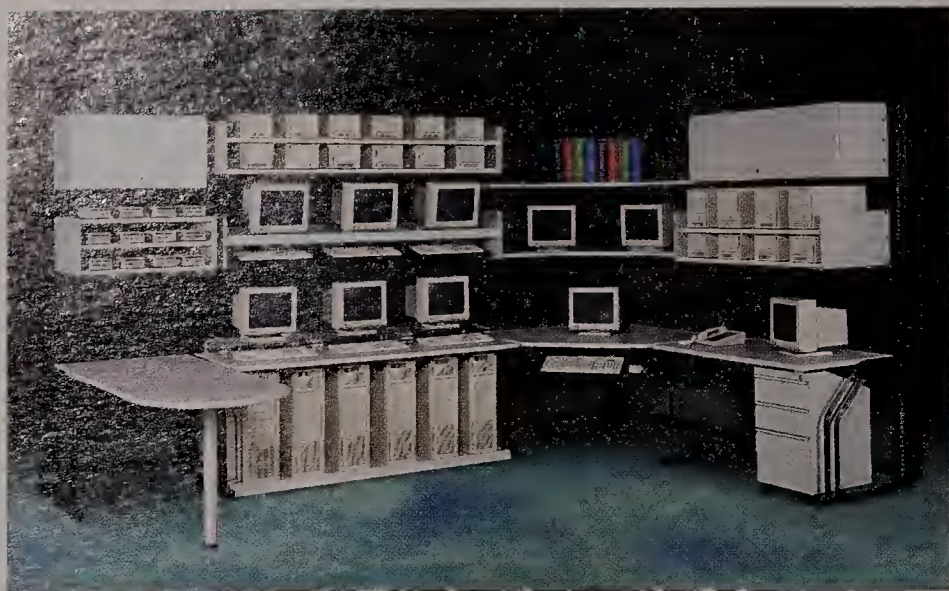
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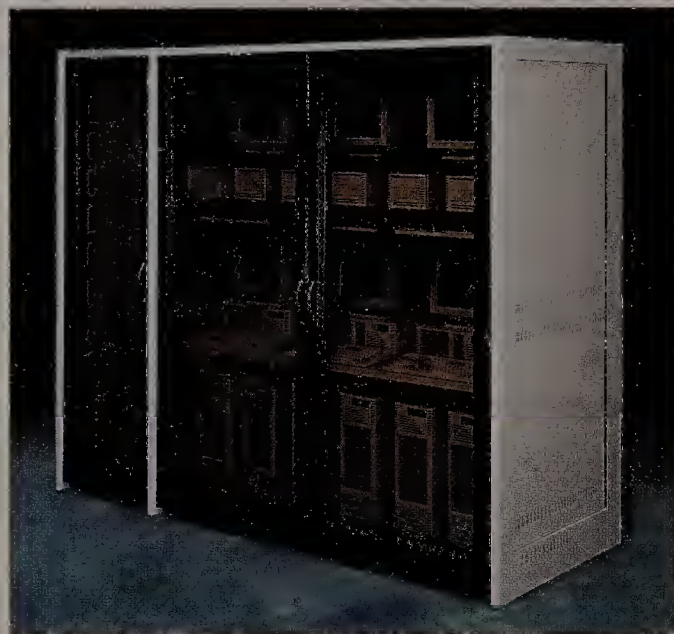
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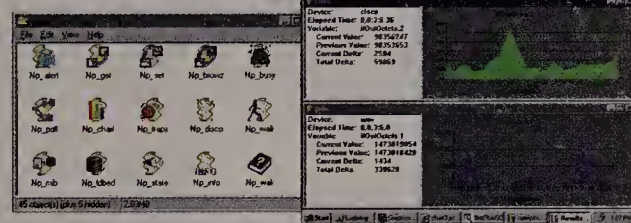
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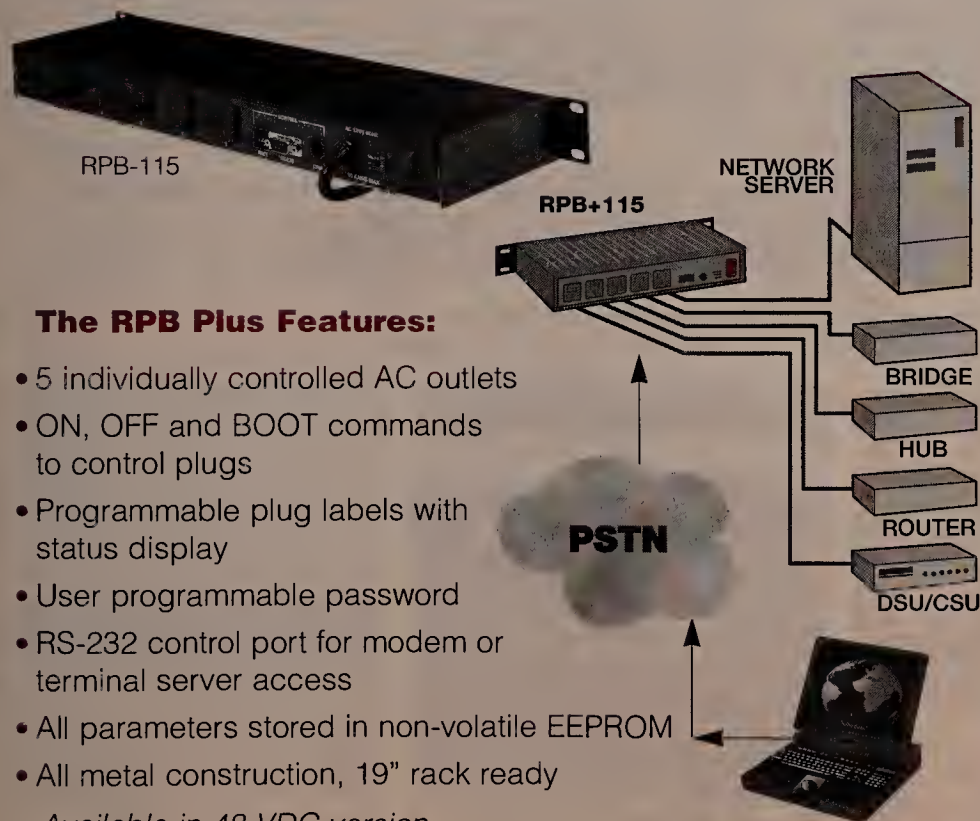
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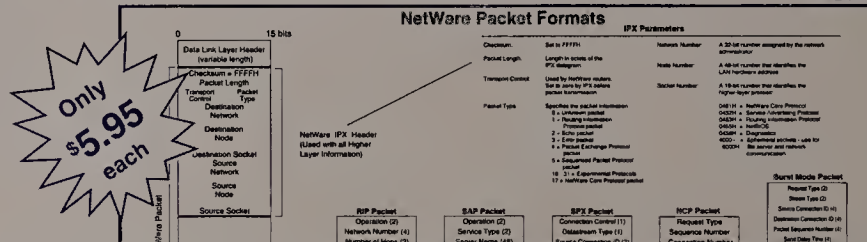
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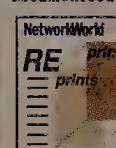
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Ascend

Continued from page 1

lies behind the Ascend/Cascade deal, valued at \$3.7 billion. The acquisition brings together two companies that dominate access and backbone switching in Internet service provider networks

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and some phone companies.

The goal is not just bulk, but unification. Principals say by year-end they will bring their product lines under a single management platform, making their gear more attractive for potential customers.

The companies also say they

E-mail

Continued from page 12

The DMA has long provided similar services governing telephone marketing and standard mail. The latter, Faley said, has been estimated to reduce an individual participant's receipt of unwanted snail-mail by 70%.

How successful the E-mail version would be is impossible to estimate, Faley said. But getting it in place is critical, given the enormous growth anticipated in Web-based commerce and advertising.

There are hard-line Internet purists who believe E-mail opt-out lists are ill-conceived because they put the onus on consumers to protect themselves from the expense and inconvenience associated with unwanted E-mail. In addition, these critics charge, the list tend to legitimize a practice that would best be prohibited.

At the opposite extreme are the unabashed spammers who refuse to acknowledge their sins or cave in to mounting calls that they cease and desist.

The DMA is looking to satisfy the middle ground.

"This will be a voluntary system [for marketers]," Faley acknowledged. "But my view is that consumer activism is nowhere more alive than it is on the Internet."

One mailing list broker says the DMA is on the right track.

"I think it's a wonderful thing for the industry," said Robert Hicks, president of the DM Group, a mailing list broker and manager in Aurora, Ohio. "Because if we don't [provide such services], it will probably get regulated to a point where nobody will be able to use [E-mail marketing]."

In fact, Hicks' company has been compiling and publishing its own opt-out list since 1995 (www.dml.com), and the list has grown to include approximately 300,000 names and addresses.

Details on the DMA's RFP, due by May 5, are available at www.the-dma.org. The association hopes to have its opt-out service running in six months. ■

cut the deal for strategic, not defensive, reasons. But analysts claim otherwise. As an already long string of multibillion dollar deals continues, smaller companies that are left out can get tossed aside, relegated to nibbling at the edges.

"The big players are grabbing up the early-stage companies, the start-ups, or the mid-tier players like Cascade and Ascend are getting together," said Rick Malone, principal with Vertical Systems Group in Dedham, Mass.

When vendors roll the dice on these multibillion dollar gambles, they believe customers want one-stop shopping. In a way, vendors are right.

Big companies have the resources to invest in research

and development that gives them technological advantages, said Judy Wood, assistant director of networking services at Johns Hopkins University's Homewood Academic Computing in Baltimore.

However, product integration can be a hassle. When 3Com Corp. bought Chipcom Corp., it took a long, confusing time to unify the product lines and strategies, according to Jim Gogan, director of information technology and systems at the University of North Carolina at Chapel Hill.

"We had to drop [3Com] from our vendor list," he said.

Ascending the throne

In the case of Ascend and Cascade, the two companies will offer a complete line of gear

The companies

Cascade Communications Corp.

Headquarters: Westford, Mass.

Founded: 1990

1996 revenue: \$341 million

Employees: 950

Key products: B-STDx 9000 frame relay switch, CBX 500 ATM switch, ATM multiservice access switches, and AX 800 and AX 1600 dial-up access switches

Major competitors: Cisco and Newbridge

Ascend Communications, Inc.

Headquarters: Alameda, Calif.

Founded: 1990

1996 revenue: \$550 million

Employees: 1,023

Key products: Pipeline remote access line, MAX dial-up access switches and GRF IP gigarouter

Major competitors: Cisco and U.S. Robotics (to be acquired by 3Com)

Shiva

Continued from page 1

dive by dropping from about \$12 to about \$8.

Capping it all off, one of Shiva's rivals, Ascend Communications, Inc., announced it would beef up its portfolio by buying Cascade Communications Corp.

That leaves Shiva's high-end remote access concentrator squeezed by a more powerful Ascend. And on the low end, increased pressure will come from the pending merger of 3Com Corp. and U.S. Robotics, Inc.

Shiva's plight is one that other networking players will face as their competitors merge into larger entities, analysts said.

"If you can't figure out how to make alliances or get acquired, you fade away," said Virginia Brooks, an analyst with Aberdeen Group, Inc. in Boston. "You become a niche player, and everybody forgets about you."

Shiva blossomed selling remote access servers into corporate networks but got pressure

from vendors with lower prices and the ability, like Cisco Systems, Inc. has, to offer more than just remote access.

"Remote access is not a niche anymore, and it is getting tough for Shiva," said Matt Barzowskas, vice president of First Albany Corp. in Boston. "I don't think Shiva as a stand-alone company

can continue to survive out there without a partner."

But Ingari is wasting no time crying over the bad news. Instead he has pinned his hopes on a new market niche Shiva is trying to carve out through a relationship with Northern Telecom, Inc.

"We've got good stuff," he said. "We've needed a partner that could get that stuff into the right accounts, knows how to sell it, knows how to price it, knows how to service it. I think the combination is very formidable."

And so is his task. "It's a very, very competitive marketplace, and you need guts of steel," Brooks said.

With his Nortel strategy, Ingari has written off being one

from access to the backbone.

Until last year, Ascend's major product lines were the Pipeline family of ISDN remote access gear and its MAX family of central site WAN concentrators. Those were beefed up with the MAX TNT, a carrier-class, high-density dial-up access switch.

Also last year, Ascend introduced GRF 400, its IP gigarouter designed to relieve router bottlenecks within ISP networks.

Cascade made its name with the B-STDx 9000 frame relay switch, which is very popular in ISP as well as frame relay service provider networks.

Cascade's access gear, the AX 800 and AX 1600 families, overlap with Ascend's MAX products. This will be dealt with in June or July, according to Bernie Schneider, Ascend vice president of strategic business development.

Both companies have been working on IP switching, with Ascend's GRF and Cascade's IP Navigator software. Combined, the companies could support quality-of-service guarantees on which ISPs could base services, Schneider said.

By year-end 1997, the merged company will bring management of its hardware under a single management platform, Schneider said. ■



Shiva CEO Ingari

of the big boys in networking.

"We think that you're going to wind up with three or four giant companies trying to do everything for everyone, Ingari said. That's a fine strategy for Cisco. But I think it's been proven that there's always room for a specialist, as long as the specialist is focusing on a category that has solid economics."

Piggybacking on Nortel's strong relationships with phone companies, Shiva hopes to reap big profits on technology that shifts dial-up data traffic from overcrowded telephone voice switches to data switches.

Carriers say they need such relief, and Shiva is betting they will want the Nortel-Shiva solution. So far, SBC Communications, Inc. has bought into the scheme, known as Internet Thruway. Specifically, Shiva contributes software and manufacturing rights to the Rapport Dialup Switch, which it developed with Nortel.

"We have a lot riding on this," Ingari admitted. "It's a strategy we went after consciously, and it won't be proven right or wrong for a couple of quarters." ■

Dead Web designers and political correctness

Joke of the week: Positions open for 39 Web designers in Southern California.

If you somehow missed it, a cult of Web designers (of all things), running a business called Higher Source, last week committed mass suicide in Rancho Santa Fe, Calif., near San Diego. Was it the HTML, the continuous Windows 95 crashes, the late night Java hacking or the endless tedium of trying to use the "World-Wide Wait" that drove them to it?

Nope. It was their profound belief that it was time to "leave their containers" and hitch a ride on Comet Hale-Bopp.

The press loved it. If the cult members had been interior designers, carsalesmen or people who worked for CompUSA, I dare say no one would have batted an eyelid.

You what? You don't think I should have been so flippant about a bunch of gold-plated wackos? And I shouldn't have picked on interior designers and carsalesmen? (I notice you didn't mind the reference to the CompUSA lackeys). Well, now you've gone and opened a can of worms.

Do you remember the days when you could call a spade a spade? Today, to be what

Today, to be what is euphemistically termed "politically correct," you must call a spade a "manually powered, cavity excavation implement."

is euphemistically termed "politically correct," you must call a spade a "manually powered, cavity excavation implement."

Now don't get me wrong, there is an aspect to political correctness (or PC-ism, as it is called) that is hugely valuable. The whole concept of being careful and respectful of others' feelings is something we need in a society that often seems to consider common courtesy an option rather than a basic requirement.

Another interesting aspect of PC-ism is that it is often paired with aggrandizement — making something that is mundane and everyday more important than it really is by bestowing a new name on it. The guys who collect the garbage are no longer garbage men. Nope, they're now "sanitary disposal

engineers," while mechanics have become "automotive repair engineers" and salespeople (can't be gender-specific) magically have turned into "sales executives" or "sales associates."

This linguistic obfuscation is plain silly. But that's the way ya gotta play it these days.

So, if we're going to be silly about it, let's *really* get politically correct, and while we're at it, aggrandize with wild abandon.

For a start, that old term "black box" must become the much more acceptable "dark container," while "white paper" turns into "nontinted document."

"Master/slave relationship" is so glaringly incorrect as to defy the imagination, while "Webmaster" can be interpreted as having gender bias as well as implying sadomasochistic dominance. These unacceptable terms must become "Unit appointed by due democratic process working cooperatively with a fully enfranchised co-unit" and "Web figure of authority."

"Client/server relationship" is, of course, acceptable, but I hardly need point out that "male and female connectors" is a big no-no, and we really should redesign them to be "nongender-specific connectors."

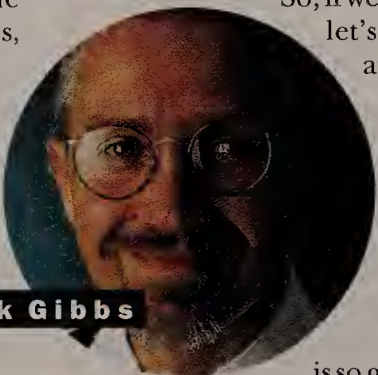
You can trap all packets on an Ethernet by putting your card into what is termed "promiscuous mode." This is, of course, beyond the pale and will simply not be used again.

A hot topic is "replication," which will become "informed reproduction," while that old favorite "abort or retry" will become simply "retry" or "free-choice termination or retry," depending on your views.

And finally, the Internet would become the "TCP/IP-oriented communications network that only covers the countries and people that can afford it." The World-Wide Web becomes the "predominantly English language, hypertext system for vast oceans of pornography, unspeakable filth and a small amount of business."

When we come down to it, I'm not politically incorrect; I'm politically challenged. And, in my opinion, it's usually the case that the politically correct are differently clued.

Send your PC-isms to nwcolumn@gibbs.com, or lecture me at (800) 622-1108, Ext. 504. Beam me up, Scotty. There's no intelligent life down here.



Mark Gibbs



'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

MOVING WITH THE DIGERATI

Less than a year ago, J.J. Allaire was running a tiny Web application development tool start-up in Minneapolis, far from the bicoastal high-tech power centers.

Today he has his own executive management team and "hangs" with Internet luminaries. Not bad for a guy just a few years out of McAllister College in St. Paul, Minn.

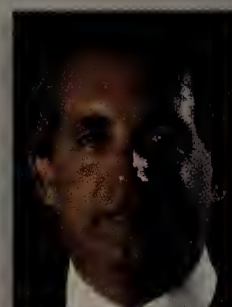
Allaire Corp. — known for its Cold Fusion Web development tool — relocated to Cambridge, Mass., in September 1996 and has expanded to 55 employees. Last week, Allaire announced the appointment of several top executives, including new president and CEO **David Orfao**, an industry veteran who was most recently a senior vice president at **SQA, Inc.**

Allaire even snagged a legitimate "name" to sit on his board of directors — **Lotus Development Corp.** founder and acknowledged Internet heavyweight **Mitch Kapor**.

Allaire, 27, said he was introduced to Kapor by someone from **Polaris Venture Partners**, chief investor in a \$2.5 million initial funding round last year.

"We hung out for a few hours and talked about the company and technology," Allaire said. "He just got really interested and we asked him if he'd like to be on the board, and he said, 'Yeah, I'd love to.'"

Allaire Corp. is seen by many analysts and venture capitalists as one of the strongest companies in the crowded Web application development market. A new version of Cold Fusion is scheduled to be released sometime this summer, and the company is now seeking a second round of venture funding.



KAPOR

JAVA JOLT

Another 'Net application development tool vendor has just received \$5 million from the **Kleiner Perkins Caufield & Byers Java Fund**.

Wallop Software, Inc., based in Foster City, Calif., targets intranets and enterprise networks with its Build-IT line of Web application assembly products.

This is the second round of financing for the two-year-old company. Wallop received \$2.5 million from **Sequoia Capital** in June 1996.

YOUR GOVERNMENT AT WORK ON THE 'NET

The **Federal Trade Commission (FTC)** is firing a warning shot at bogus "credit repair" Web sites that offer to fix consumers' poor credit records.

The FTC has sent letters to 47 credit repair sites informing them of a new federal law that prohibits credit repair organizations from taking consumers' money before fully performing promised services.

Talking about taking your money, don't count on getting through immediately to the **Internal Revenue Service** site in the next week or so. Traffic to the site (www.irs.ustreas.gov) has increased dramatically as April 15 approaches. While the IRS says it has received no complaints since upgrading its system in late March, many end users say they haven't been able to access online tax forms.

THE KING, THE BLUES AND THE GEEKS

More than 1,500 people are attending this week's 38th **Internet Engineering Task Force (IETF)** meeting in Memphis, Tenn. As a public service to IETF volunteers, here are a handful of dos and don'ts for newcomers to the city that calls itself The Birthplace of the Blues:

- DO check out the clubs, museums and stores along Beale Street.
- DON'T whip out a laptop in a blues bar unless you want to risk incurring some "bad mojo." (And mojo, as any bluesman will tell you, cannot easily be reconfigured.)
- DO visit Graceland. Elvis' old estate is tackier than an IETFer's wardrobe but should not be missed.
- DON'T make jokes about the Civil War. It's still a sore subject.

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